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Precision SHOOTING

Dealing exclusively with the topic of extreme rifle accuracy

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EDITORIAL

"Then some fool lost our corkscrew, and we were forced to live on food and water for several days".
W.C. Fields

We have not had an editorial for a few months now (we note a distinct lack of letters protesting the omissions). This is because of the PS editor's simple, child-like belief that if there is nothing for him to say . . . then maybe that's the best thing to do. This belief is so singular and unique . . . that we note that it (unfortunately) has not occurred to many other moguls of the publishing world. Well, all good things must eventually end, and this includes the editor's silence. We trust that you enjoyed it while you had it.

We were seated peacefully in our local pub a few evenings ago (people who are only five foot five inches in height have a marked tendency to sit peacefully in pubs), half listening (we tend to half listen a lot . . . including some times when we should be fully listening) to a couple of ladies whom we knew, in the current argument of the day. Down around Palm Beach, Florida a few of the Kennedy clan were wandering about the beach at an early am hour with a few just recently met young ladies, and somewhere along the line, on the following day the nasty word "rape" entered the scene, with charges and counter charges being tossed about. The whole matter became quite the cause celebre there for a while, and became the focal point of a lot of controversy when a few normally staid newspapers printed the lady's name . . . and brought forth a certain amount of controversy thereby. That was just the point that these two good ladies were arguing . . . the propriety of revealing the name of the victim or not. As we sat there peacefully, half listening . . . the thought struck us that Precision Shooting magazine does not have an announced, public posture on this issue . . . and apparently every other magazine in the free world has taken a stance on the matter in recent days. Accordingly, we wish to inform our readership that PS magazine will not publish the name of rape victims. Never let it be said that we hesitated to take a stance.

We received a letter from one of our readers recently in which the writer bemoaned our deletion of the words "or which the editor takes a dislike to" at the end of our "notice to advertisers" announcement on page two of each issue. The writer felt that this gave him a certain assurance that he would not see "some of the garbage that other firearms magazine are accepting for advertising these days". Mildly curious about some cultural phenomenon that we were apparently blissfully unaware of, we wandered over to the magazine rack at the local drug store that evening, and idly thumbed through a few of the firearm magazines. Apparently our monastic disinclination to purchase magazines that carry long articles on "Is the 22 magnum adequate for moose?" has resulted in whole worlds passing us by . . . as the fellow said, advertisements of singularly well endowed young ladies with assault rifles "send for the full video" were indeed commonplace. Now we most certainly have nothing against well endowed ladies and we do publish articles on target shooting AR15s, so we are not total puritans. But you may notice that the missing wordage has been restored to the "notice to advertisers". Just in case.

Our readers will possibly have noted a series of changes in our columnist listings over the past several months. This tracks the overall evolutionary movement of Precision Shooting magazine away from a "benchrest only" publication to a more broad based magazine, one which deals with several facets of "extreme rifle accuracy". We increased the page count of PS last month, going from 64 to 68 pages, and we will probably increase it again, toward the end of the calendar year, to allow us more room for coverage of the various disciplines that are now being regularly dealt with in these pages. And it has to be pretty plain that we are expanding our subject base.

The recent additions of Todd Kindler and Bob Jourdan as columnists give us a broad spectrum of interest, with both of them still being very critical seekers of rifle accuracy. But neither of them have exchanged marriage vows with the 6PPC cartridge . . . as, unfortunately, many of the benchrest shooters have. Such a wedding gives the individual a highly efficient benchrest competition setup . . . but also a rather narrow and provincial window through which to build a good working knowledge of rifle accuracy. Many very successful benchrest shooters today are very short of knowledge on such routine handloading procedures as annealing brass, case forming, or indeed how to deal with any confounded cartridge except the omnipresent 6PPC. We must admit that their work with the 6PPC has brought that cartridge to such a state of development that there is not too much anywhere near it as a competitor . . . but it's still a kind of boring thing at times! Both Todd Kindler and Bob Jourdan get out there in the mud in the trenches and do strange and different things . . . with the net result that when some reader writes that he's having troubles with a .257 Weatherby . . . we've now got in-house talent to address the issue.

The field of .22 rimfire was another one where we were a bit weak previously, to express it kindly. Then we found that Larry Brown, the father of BR-50 shooting, was pretty savvy about rimfire accuracy, and indeed built some pretty nice .22 rimfire bench guns (see page 59 of the May issue). We added Mr. Brown to our columnist ranks, specifically to cover this aspect of rifle accuracy. We are seeing much more interest among our readers in getting a rimfire to shoot well off of sandbags; a recent visit to Jim Greenawalt's shop found him assembling his first .22 bench gun . . . and we suspect there are more yet to follow.

The world of Schuetzen shooting is well covered by the erudite Warren Greatbatch. There is no sense trying to give Warren direction of desired subject matter . . . he gives his attention to whatever subject matter interests him at that particular point in time . . . and once the editor got that through his thick head . . . we've had a fine working relationship ever since. The first year Warren showed up at the PS Board of Directors meeting in a distinctly ominous looking Porsche, and the second year, on his way to a single shot match, his loading gear and equipment was stowed into a Mercedes station wagon (an auto that does not exactly grow on trees around here). We're still trying to persuade him to bring his (original) AC Cobra 289 to the next meeting . . . although its storage space is a bit on the short side. After the PS meeting last year, Warren, Dick Maretzo, and the editor ended up in the Geisel Haus in Canton, Ohio . . . a German beer garden type of establishment with something like 50 different imported beers to choose among, bowls of peanuts (the shells went on the floor, of course), and bowls of popcorn. Warren, as a real student of Schuetzen atmosphere, which has a lot of Germanic, and beergarden influences in its heritage, gave me the impression that he had died and gone to heaven. A couple of hours later we got them out of there (or maybe it was the other way around), and we were pretty much talked out on Schuetzen shooting . . . at least for the moment.

Buddy Salyer has been our big bore columnist for some time now, and his regular contributions to our pages have now started to attract the input from other big bore enthusiasts, so we expect to give more cov-

Continued on next page

EDITORIAL

Continued

erage to this discipline in coming months. Every now and then Buddy goes off on some new equipment theory or tangent, and we will get a few letters asking us "why doesn't he just do more practice shooting with accepted and current equipment. Why is he messing around with these wild ideas of his?" Such writers miss the point. We seriously doubt that Mr. Salyer lies abed at night, dreaming dreams of winning rifle matches. He gets much more amusement trying things that are new ideas, or new approaches. May his tribe increase.

Boyd Mace joined us a while back, after our publication of his first article, on the topic of long range prairie dog shooting in Zortman. Many readers have come to enjoy the tales of The Bwana of Zortman, and his faithful gunbearer, The Old Fart, as they manage to get into more problems out West than reasonably intelligent folks should.

Another Strange Fellow is Rich Kayser, who started in these pages with a prairie dog hunt story . . . then proceeded to get into the Schuetzen/lead bullet world . . . and the last I heard from him was "see you at the "Super Shoot" . . . so heaven only knows what his next tangent will be. But he's not dull . . . and he IS the guy who brought the match .25 bullet into the world . . . and for that we owe him.

We do not wish to ignore our old time columnists who have done so much for us over the years, the names of writers such as Geza Nagy, Merrill Martin, Dick Cundiff, and Bob Pease are well known to all our readers . . . we merely wanted to point out a few new names to you, and to do a bit of an introduction, if one was needed.

A FEW THINGS IN PASSING. Tales reaching us from the field about the new .25 caliber match bullets being turned out by Jef Fowler are wildly enthusiastic, to put it mildly. We caught up with Jef recently, and he told us that the J4 jackets were fully the equal of the best 6mm jackets that he had ever seen. This fact is spreading rapidly by word of mouth, and gunsmiths are suddenly getting calls for .25BR chambering jobs. We also are watching the progression of a "super scope" that is being developed by a source that is well known to readers of these pages. We are sworn to secrecy, but some benchrest shooters are sort of excited about it. The Strange Duck Invitational will be held on July 27-28 this year, at the Painted Post Range, in Painted Post, New York. You may want to start packing the car now. Finally, a social note: Bill Sutton (brother of Jack Sutton, of Hart Rifle Barrels) married Ramona Richards on May 4th. Don't ask me why we are including this here. But Mr. Sutton thought the world was waiting breathlessly for the word. And we to do try to keep our advertisers happy (or at least quiet).

A CLOSING THOUGHT . . . It's never too late to have a happy childhood (Most of us are in our second childhood anyway).

IN MEMORIUM

Robert Biggerstaff, known in the benchrest community, left us on March 3, 1991. Unbeknown to many, Bob had a serious heart condition.

Those that knew him will remember his boyish enthusiasm for the sport, the sparkle in his eye, and glentle manner.

Bob was pleasant company and will be sorely missed.

John Gammuto

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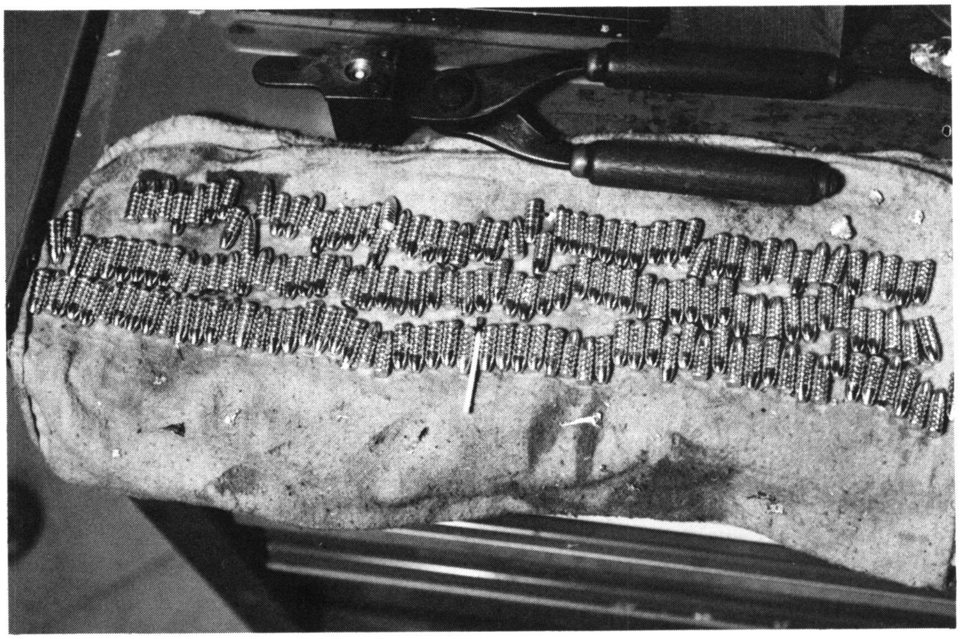
THE QUARTER BORE CORPS

BY

Warren Greatbatch



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In its never ending quest of the arcane, the ASSRA allowed the overlay of a .25 caliber match at the ASSRA National Summer Match at Etna Green last year. It was the charter outing of the Quarter Bore Corps. .25 rifles were used at 200 yds. to fire 10 shots for score, 250 being the highest possible score. In addition the targets were measured for smallest 10 shot group. The principal rogue in the affair, Ken Meyer, initiated the scheme with a letter early in the year inviting selected individuals to bring their .25 caliber rifles to shoot for score and group at 200 yds. Of course, nobody but Ken had a .25 caliber rifle. He had 30, 29 of which were for sale. It wasn't until the September/October issue of the ASSRA News came out that I discovered the enormity of the plot. Ken actually set up his rifle and practiced. 40, yes 40 shots were fired in preparation for the match.

George McCluney won the scope score match with a 240 (3 centers) using Ken's equipment. Bob Meyers won the Iron sight score match with a 231 (2 centers) also using Ken's equipment. See a pattern forming here? Ken Meyer won the group match, with a 2.109″ ten shot group, using a Neidner HiWall in 25-35. The thing I still haven't figured out is how each of the Meyer sycophants can be holding their own rifle in the Corps photo. Seems they should each have a hand on THE rifle. To add insult to injury the match report credited your faithful correspondent with the Distance Driven award, not for being a good shot.

It is that time of year again. Another letter arrived in the mail last week. But guess what, I have a plan. I bought three rifles and I too am going to practice. I will fire 50 shots, 20 (Brennan - don't fix the arithmetic, this is a rare statistical variation of the Weibull distribution that constitutes one aspect of my secret plan. I feel a moral imperative to publish a hint but know the bleating masses will never figure it out.) in each of the three rifles, to determine which rifle, mould, load combination will win. In addition I will have a spiritual advantage. I am going to be the only one with a quarter bore T-Shirt.

The first .25 centerfire rifles were intended to be used as short range (100 yd.) small, game rifles. They were accurate, quiet, and the rifles were very nice to hunt with. Because of the low recoil, the rifles could be made small. Small rifles are easy to carry around in the woods in pursuit of squirrels, woodchucks, and the occasional sasquatch. The vast majority of .25 caliber single shots are in a hunting rather then Schuetzen configuration.

The .25 enjoyed a brief flare of popularity in Schuetzen shooting around the turn of the century. Pope made some at Hartford in the mid-1890's though only a few remain. George Schoyen was also partial to the 25-21 and Zischang is said to have made a few though I have never seen one. Stevens manufactured quite a number in both their 44 and 44 1/2 just after the turn of the century. Winchester also turned out a number of Schuetzen rifles in .25. The first class shooters quickly upgraded to 28's, 32's and eventually 33's. With the advent of smokeless powder, jacketed bullets, and WW I the emphasis shifted to the 30-06 and military stule competition. Small bore rifles were not again considered serious accuracy rifles until the rebirth of long range varmint shooting and then benchrest competition after the second world war. The .25's fell from favor because the bullet (usually less than 100 gr's.) is deemed too light to have "Wind bucking ability". In fact, despite of an attractive ballistic coefficient, these small caliber bullets do seem difficult to shoot in the wind.

Continued on next page

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THE QUARTER BORE CORPS
Continued

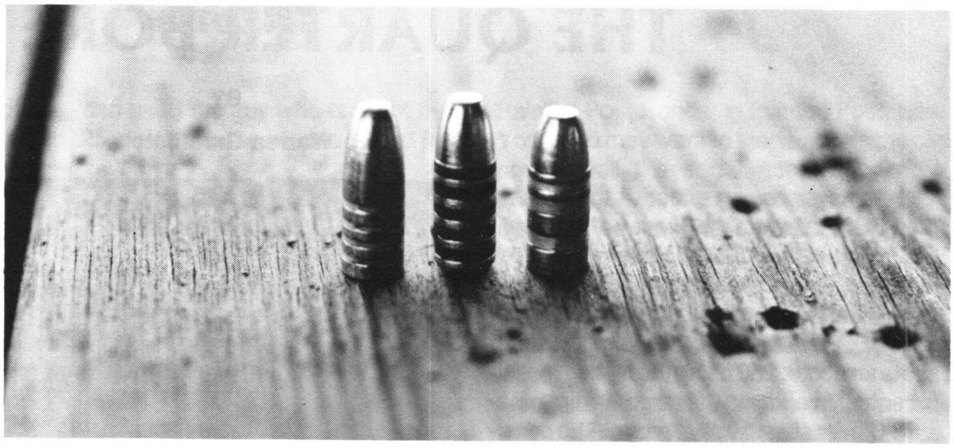
Predominant calibers

Five .25 caliber centerfire configurations are commonly found in single shot rifles. Barnes, Sharp, Donnelly, Roberts and Waters, Dutcher and others have published extensive descriptions of all of the .25's. The references vary so don't bet a lot of money on any of the dates. The brief sketches below are mostly cribbed from Philip Sharp's Complete Guide to Handloading (1937) which seems an appropriately classical reference to use in the cultural section of this magazine.

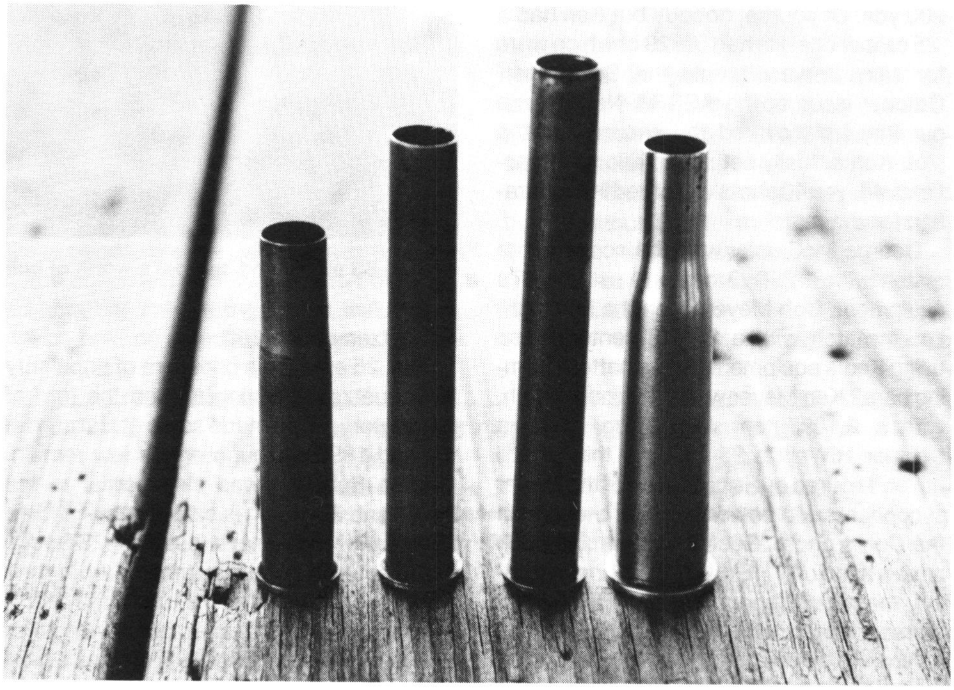
25-20 Single Shot (SS)

The 25-20 SS was designed by Francis Rabbeth (An early wildcat?) who was looking for an accurate small game cartridge. Rabbeth thought the .22 not large enough for small game and the available commercial cartridges too large. An article featuring Rabbeth appeared in the Feb. 1887 issue of The Rifle where it was noted "...his .25 caliber is now his favorite hunting rifle, with which he has killed much game and many alligators." He wrote the first article advocating the 25 in the April 1889 issue of Shooting and Fishing after experimenting for three years with a specially made Remington. UMC introduced the cartridge commercially in 1889. In 1889 Maynard introduced the first commercial chambering in its tip up rifles. Shortly hereafter Maynard was absorbed by Stevens. Stevens continued to produce rifles in this now popular caliber.

Sharp considers the little bottle necked cartridge, "...an extremely popular and accurate number, and in every way superior to the 25-20 repeater cartridge."



Custom 90 gr., Win 87 gr. 25 SS, Ideal 85 gr.



25-20 SS, 25-21, 25-25, 25-35.

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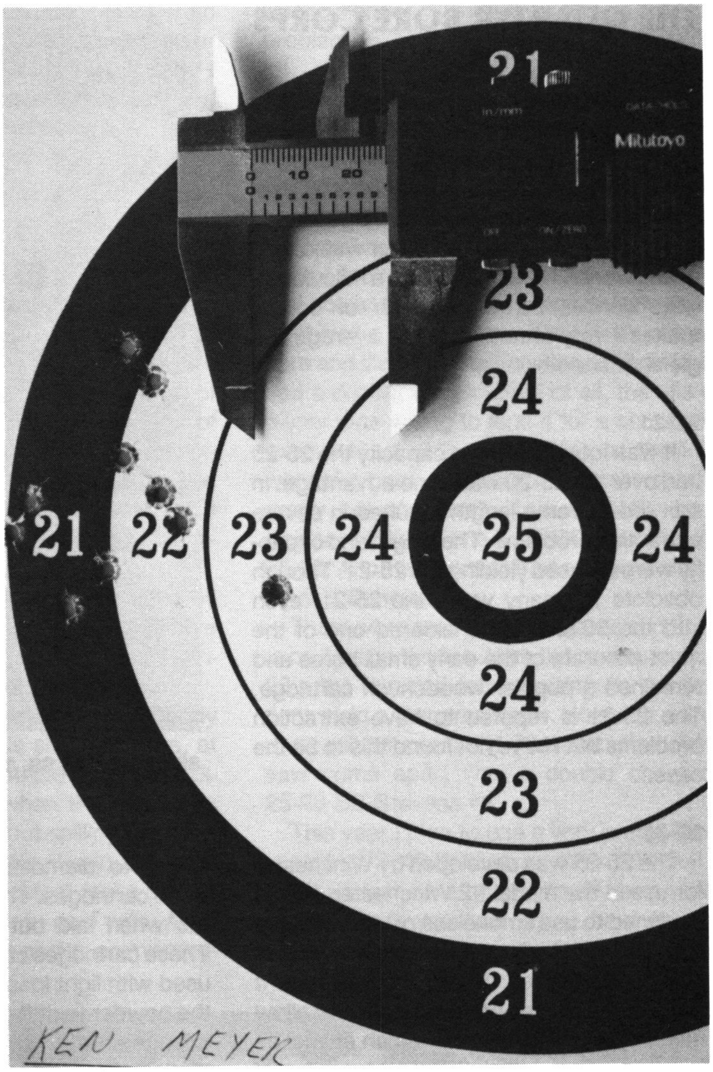

Ken Meyer's winning group.

25-20 WCF (Sometimes called the "Repeater")

The 25-20 WCF was developed in the mid 1890's as an updated 25-20 designed for the Winchester model 92 and short action Marlin rifles. It looks similar to the 25-20 SS but is quite different as it is based on a necked down 32-20. The head diameter is larger and the overall cartridge length is less than that of the 25-20 SS. The two cartridges are not interchangeable so make sure you know which one you are working with. The 25-20 WCF has never been considered as accurate as the 25-20 SS but to the best of my knowledge little work has been done on this cartridge in the last 30 years. The availability of brass would seem to make this cartridge worth revisiting.

25-25

In the 1890's many riflemen thought that black powder would not work properly in a bottlenecked cartridge so when the bottlenecked 25-20 was developed there was demand for a straight sided cartridge with sim-

Continued on next page

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THE QUARTER BORE CORPS

Continued

ilar performance characteristics. As a result, the straight sided 25-25 was introduced, for the Stevens 44 single shot, in 1895. Sharp describes it as "About as useless and freakish looking a cartridge as was ever developed...". Sharp never was one to mince words. He is right, this is a ridiculously long slender cartridge which of course makes it very attractive to the average single shot shooter.

25-21

It was found the extra capacity the 25-25 had over the 25-20 was of no advantage. In fact the extreme length resulted in severe extraction problems. The length and capacity were reduced yielding the 25-21. Though obsolete for many years the 25-21, even into the 30's, was considered one of the most accurate of the early small bores and remained a popular woodchuck cartridge. The 25-21 is reputed to have extraction problems but I have not found this to be the case.

86 gr. Win. 25 SS, 190 gr. .325, 1919 gr. .68 slug gun bullet.

25-35

The 25-35 was developed by Winchester for use in the model 92 Winchester. It was designed to use smokeless powder making it one of the earliest American smokeless powder cartridges. Sharp recommends it for deer but it does not seem to me to allow much of a margin for error on an animal as large as a deer. I think this a grotesque cartridge but it is hard to ignore the results Ken Meyer and his toadies achieved with it.

The thing one first notices is the high length to diameter ratio for the straight sided cartridges. These things look like pencils when laid out on a shooting bench. These cartridges can be troublesome when used with light loads because it is easy for the powder to drift away from the primer. In a range situation one must pay particular attention to keeping the powder against the primer when inserting the cartridge in the rifle. Stevens advertised the 25-21 as a variable loading cartridge. One could put a small amount of powder against the primer and hold it in with a wad allowing one to have a light plinking load. Modern practice advises that a wad, far from the bullet, becomes a projectile making the bullet an obstruction. While it is unlikely the rifle will come apart, a ringed chamber is a distinct possibility.

Brass

Brass is tough. A lot of it was made but a long time ago. The 25-20 WCF and the 25-35 are the only cartridges one is likely to find in any quantity because they were made until a few years ago.

It is usually possible to find a few pieces at a large gun show. One will have to pay collector prices but fortunately, if breech seating, a couple of cartridges will last all summer. Almost everyone who has a rifle has brass and maybe a mould. When buying a .25 it is especially important to try to buy any, or at least some, of the brass that went with the rifle. If there are hundreds of rounds available, there is a ready market for it. Just advertise in the ASSRA News.

.25-25 is the longest of the straight sided cartridges and can be cut down to make the 25-21. My recommendation, as a conservator of antique rifles, is that you buy the 25-25 brass when it is available but save it for a 25-25 rifle. Until someone decides to make high quality new brass the existing stock pile is all there is going to be. It seems a shame to spoil what little there is left.

.25 basic brass made in Australia (has a kangaroo in the head stamp) can be found

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but my experience with it is very poor. I bought a box of 20 for $35 at a gun show last year. 6 of the 20 split along the side on the first firing. Fortunately, the HiWall was tight and I never experienced any gas blowing back but needless to say, the exercise was less than successful. Others I know have had the same experience. It is useful to keep in mind the loads listed below are very light. The bullets were leaving at about 1400 fps. It is just crummy brass. Hold out and find the antique stuff.

Bullets

Moulds, along with brass, are a real problem. There are not many usable antique moulds on the market because the .25 was never that popular as a target caliber. For every .25 caliber mould at a gun show there are 1000 .30's. Last year Ken Meyer cast extra bullets in several configurations and was very generous in sharing them. With the increased interest in competition it is unlikely Ken is going to cast for dozens of competitors.

Last year I used the Winchester factory 25-20 SS mould. Unfortunately, it didn't shoot very well. Without going into gory detail my best group was 5.5 inches at 200 yds., about in the middle of the pack. The bullet is fairly light (82.5 gr.) and has a beveled base. It also has grease grooves all the way to the ogive making it difficult to keep the bullet centered in the bore as the bullet upsets upon firing. I also found the Winchester small at .2555, for the rifle I used, a Stevens barreled HiWall which slugged at .2575.

I am not sure what to suggest in the mould department for those interested in shooting this summer. Ideal and Winchester both made a variety of moulds. Ideal cataloged moulds are as large as 140 gr. and they also sold a mould that cast a 26 gr. round ball. All three of my rifles, as well as several others inspected but not purchased have 1-13 and 1-14 twists. For this range of twist, using Greenhill's formula, a bullet between .700 and .720 long would be about right. A .720 bullet should come in at about 100 grs. The "Standard" diameter for a .25 is .257. My 3 rifles, all Stevens barrels slugged at .2575.

I like soft bullets and cast at 25-1 lead to tin. Ken used a similar alloy at 22-1. I found it difficult to keep the mould hot enough to cast good bullets. I had to pre heat the mould with a propane torch. Once going I did not stop until my pot needed to be recharged. Fortunately, with such small bullets, a pot of lead lasted a long time.

For this year I should have had a couple of custom moulds made. Naturally I have waited too long to order them and still expect to get them for the coming season. I have checked with a couple of mould makers and they are not tooled for anything smaller than a .30 so it might take a while for you to actually own a custom mould. Fortunately, I have found 4 different antique moulds to try. A couple of them look promising but it is impossible to tell, without shooting, which will be best.

Loads

Because the loads are small it is especially important to use a powder that meters accurately. Most shooters used IMR 4227 in the 8-9 gr. range. Three used 4.5 to 5.5 gr's of Unique. One rifle was fired with 8 gr. of Hercules 2400 and another with 8.5 gr. of 4759. Two competitors used fixed ammunition the rest fired breech seated bullets. The largest groups were fired, 7 1/2 inches and 9 1/4 inches at 200 yds., with fixed ammunition.

Remington 2 1/2 primers were used by Ken Meyer. I used Federal 205's. There were also Federal 210's, 200's and Remington 6 1/2's and 7 1/2's on the line.

To the best of my knowledge, nobody used wads. Most single shot shooters, at least the guys using antique rifles and calibers, use wads only when the cartridges can not be loaded without spilling the powder in the rifle. The wad is always placed in the mouth of the case. Most feel a wad is simply another variable to deal with. All of the 25's, even the bottle necks, are relatively long slender cartridges so spilling is not a problem.

Rifles

All manner of rifles were used. I shot a reborn 25-20 HiWall varmint rifle. Ugly!!! Someone used a hand drill to install a receiver mounted scope. Also had custom wood designed by the same guy that designed the brick. I think the stock was fitted by the dude that bolted my last Chevy together. However, it had a #3 Stevens barrel with a nice bore and the HiWall action was still tight and had a decent trigger. Best of all, the rifle's owner was willing to lend it for a couple of weeks. Most of the other rifles on the line were also beat up hunting rifles that weren't pretty but shot well. Two shooters had Neidner HiWalls, one in 25-20 the other in 25-35. Another shooter fired a Pope and another a Schoyen.

There were a number of Ballards and Stevens 44's on the line. With the small headed 25's the reduced forces acting on the action yield a margin of error. However, care must still be exercised. The first rifle I ever saw come apart was a double charged 25-20 SS Stevens 44.

This year I plan to use a very pretty Stevens 44 1/2 /49 Schuetzen rifle in 25-20. If I show up in the match results as having the best T-Shirt you will know how things went.

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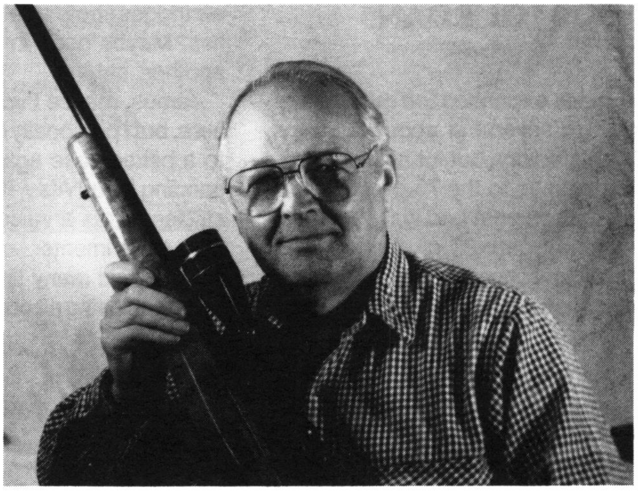
BOB JOURDAN



Dear Bob,

I really enjoyed your article in the February issue of PS on the .25 caliber.

I am interested in another rifle with 3800 plus feet per second, but this time using a larger bullet than my .22 Cheetah Mark I 40° shoulder (which moves a 50 grain bullet at 4200 feet per second). I'm interested in rebarreling one of my rifles to .257 Weatherby Magnum, to push 87 grain bullets out at 3800 plus feet per second, as you mentioned in your article. But, before I actually get started with this venture, would you be so kind as to provide some expert advice on the subject. I would greatly appreciate it if you would answer the following questions for me.

1. What barrel contour and length would you recommend?
2. Do you prefer fluted barrel, or plain?
3. Chamber — should the throat be freebored, or standard?
4. If I do not have the barrel freebored, will I be able, with standard throat and rifling, to push an 87 grain bullet at 3800 plus feet per second? And if so, using what sort of a load?

In closing, if you have any thoughts on .25 caliber cartridges overall that you think that I should take into consideration, I would appreciate your sharing those thoughts.

James M. Ferguson
Wharton, Texas

James M. Ferguson
5320 FM 1299
Wharton, TX 77488

James,

Thanks for your interest in my article on the .25 calibers in Precision Shooting. As you may know, the accuracy problem with the .25 caliber has been real, but maybe the new benchrest quality bullets will be along soon and we can try to improve the .25s. My several .25s have always given a few excellent groups mixed in with some that were really terrible! The problem is now known to have been (and still is) the quality of the bullets.

You mention setting up a .257 Weatherby Magnum. Many years ago I, too, just had to have one. It was the fastest thing I had seen since Ginger the Cheer Leader! I had Weatherby set mine up, so I really expected great things. To make the long and painful story short, it wasn't accurate, it was finicky for loading and the cases just wouldn't hold up when trying to gain factory velocities. I tried for about two years. Sold it, but not the desire for high velocities in a combination varmint-deer cartridge.

So, when Winchester announced their earth-shaking .264 Magnum, out to the store I went again. Of course, it is a twin to the .257 Weatherby, with the bullets being only .007″ larger in diameter. Their announced velocity of 3700 fps with the 100 gr. bullet was better than the Weatherby, and I just knew that I could really load up the little 85 gr. Sierra to something fast . . . 3850-3900 fps . . . It wasn't to be. Even the factory later admitted they couldn't get the 3700 fps with the 100 gr. bullet, and finally dropped the advertising to a realistic 3320 fps. I chronographed their load in my .264 and the reading was actually 3186 fps! Even in light of that, I continued to try. The best I could do with the 100 gr. was 3525 fps from a 24″ barrel, and even then the belts on the cases expanded too much to use after only three shots. Finally, I gave up, but still am looking for a really fast cartridge of .25-.26 caliber. My research showed that I could beat the .264 magnum with a 6.5x06 Ackley Improved, which I am working with now. A full case of H450 behind a 100 gr. bullet gives me 3550 fps. I have only worked the 85 gr. bullet up to 3624 fps, but have some room yet to go. I think it will reach 3850 fps, if calculations can be believed. The very maximum calculation even shows that the 85 gr. bullet can be driven to 3978 fps! I think that will prove to be too much.

Enough on this. I sort of get carried away on high velocity.

To answer your questions concerning a .257 Weatherby Magnum:

1. Barrel contour should be the Douglas #5 or #6. All barrel companies cut to the Douglas tapers. The #5 is a heavy sporter, .700″ diameter at the muzzle, 1.75″ cylindrical chamber area length, weight 4#. The #6 is a light target contour, .750″ muzzle diameter, 3″ cylindrical chamber area length, weight 5.5#. It is straight taper. Either should be 26″long. If you prefer shorter, it can be cut. If you start with a 24″, you can't add. My personal choice would be the #6 so as to gain the weight which means better accuracy.

2. Do not flute the barrel. This is done by benchrest shooters so as to meet gun weight limits. Some varminters do it to give more surface area for cooling, but this is risky in that any fluting has to be so very carefully done to prevent stressing the steel. The cost to flute would go a long way toward buying your next barrel.

3. Never freebore a barrel. All accuracy shooters have proven time and time again that when a bullet is not close to the rifling at ignition, it will not have its best accuracy. They prefer seating a bullet somewhere between .040″ back of the lands to perhaps just touching them. Accuracy will change with each .010″ of seating change. Recently, most all companies have gone to freeboring their products in an effort to avoid liability claims. This will lower the chamber pressure considerably below that of their test barrels, assuring low and safe pressures. Of course, it also results in much lower chronographed velocities of their loads. In any freebored barrel a given load will require more powder to reach the same velocities of a non-freebored barrel. Conversely, if a safe load in a freebored barrel is fired in a non-freebored barrel, pressures may be too high for safety.

4. 87gr. bullet at 3800 fps in freebored or standard barrel. If 3800 fps can not be attained in a standard barrel, freeboring will not be of much help, if any at all. If 75 grs. of powder will give 3800 fps in the standard barrel, you will have to add several more grains to get that velocity in a freebored barrel, resulting in a shorter barrel life. Also, you will lose accuracy. When I used the .257 Weatherby I did not have a chronograph, so had to rely on the loading manuals and drop tests to estimate the velocities. My records indicate that I never achieved 3800 fps be-

Continued on next page

BOB JOURDAN

Continued

cause the cases expanded too much at the belt. I do show several at about 3750 fps that were satisfactory, but for higher velocity I had to go down to the 75 gr. bullets. A load I used that was not bad was 70 grs. of H4831 with the Speer 87 gr. bullet. Since obtaining my chronograph a few years back, I've noticed that these rather large cartridges show erratic results in different rifles. Maybe good in one and excessive in another, etc.

James, maybe I've poured out too much here, but I personally do not want to go back to a belted case again and fight those expanding belts! Also, I'm slowly learning that efficiency has a value, just as our greatest rifle experimenter of this century, P.O. Ackley, said many times.

I'm enclosing a couple of my experimental load sheets, one for the .243 Ackley Improved, and one for the cute little .250 Ackley Improved. You will note that several loads exceed 3900 fps with both, and a 3800 fps load looks like a real possible winner.

Hope this helps more than hinders!

Bob Jourdan
385 Fenway Place
Bartlesville, OK 74006

Continued on page 14

.250 Ackley Improved 40°

Bolt Action Loads: Rem. M700, 26" Barrel
By: R. H. Jourdan

BULLET WEIGHT	STARTING TEST LOAD				TESTED LOADS				NOTES
	POWDER	CHG	VELOCITY	CASE	CHG	VELOCITY	CASE	TEMP	
60 gr.	H322	40	3772	R	42	3992	R	95°	
	AA2520	40			42	3821	R	92°	
	IMR4895	42			43	3735	R	93°	
	BLC-2	43	3695	R	45	3883	R	90°	45 gr. = .34" @ 100 yd.
75 gr.	AA2520	39	3526	R	41	3850	R	92°	
	H322	40	3646	R				95°	
	H4895	42	3662	R					
	BLC-2	42	3544	R	44	3729	R	90°	43 gr. = .49" @ 100 yd.
	IMR4895	41			42	3497	R	93°	Erratic with 1 more gr.
	H414	46	3444	R	48	3704	R	94°	Accurate. 47gr.=.32".
87 gr.	AA2520	38	3200	R	40	3683	R	92°	Ejector marks on case.
	H4895	40	3372	W				95°	40 gr. = .48" @ 100 yd.
	IMR4895	39			41	3514	R	93°	Accurate.
	H414	45	3428	R	46	3467	R	94°	Powder lot is important.
	H380	44	3223	W	47	3442	W	95°	Compressed. .61" @ 100 yd.
	IMR4350	44			45	3330	R	92°	Compressed.
	H4831	45			46	3222	R	100°	Full case, compressed.
90 gr.	H380	45	3296	W	46	3319	R	90°	
	H414	43	3219	R	45	3403	W	92°	Very accurate.
	IMR4350	44	3237	R	45	3306	R	92°	Compressed.
	AA3100	45	2984	W				60°	Slightly compressed.
100 gr.	AA2520	36	3050	R	38	3408	R	92°	Ejector marks on case.
	IMR4895	39	3167	R	40	3255	R	93°	Accurate.
	H380	44	3165	W	47	3337	R	98°	Compressed. Group .29".
	IMR4350	42	3012	R	44	3183	R	95°	
	H414	44	3267	R	46	3382	W	92°	Accurate.
	H4831	43	2910	R	45	3099	R	100°	Compressed.
117-120 gr.	IMR4895	35	2786	R	36	2871	R	93°	Accurate.
	H380	38	2716	W	41	2850	R	98°	
	IMR4350	38	2675	R	40	2855	R	92°	
	H414	38			39	2795	R	94°	39 gr. = .29" @ 100 yd.
	H4831	40	2696	W	42	2816	R	100°	Mild.

.243 Ackley Improved 40°

24" Barrel: Ranger Maverick
By: R. H. Jourdan

BULLET WEIGHT	STARTING TEST LOAD POWDER/CHG/VELOCITY/CASE				TESTED LOADS CHG/VELOCITY/CASE/TEMP				NOTES
60 gr.	H4895	42	3690	W	45	3945	W	50°	
	IMR4895	42	3445	W				75°	
	IMR4064	45	3781	W	48	4116	W	55°	Careful of temperature!
	H380	49	3676	W	50	3745	W	45°	
	H414	50	3582	W	52	3993	W	90°	Full case.
70 gr.	H414	50	3763	W	51	3860	W	95°	
	H450	49			51	3566	W	95°	Full case.
75 gr.	IMR4895	43	3452	W				50°	
	IMR4064	45	3545	R				65°	Accurate @ 45 gr.
	H380	48	3485	W	50	3606	W	55°	
	H414	47	3288	R	50	3670	W	50°	Powder lot is important.
	IMR4350	47	3427	R	48	3506	R	50°	
	H450	49			51	3453	R	55°	Full case.
90 gr.	IMR4895	41	3187	R				55°	
	H4895	39			40	3271	W	45°	Watch temp.
	IMR4064	40			43	3371	W	38°	Watch temp.
	H380	44	3119	R	47	3334	R	55°	
	H414	48	3307	R	50	3352	W	45°	Excessive at 90°.
	IMR4350	44			47	3411	W	55°	Excessive at 75°.
	H450	46			50	3360	W	90°	
	H4831	46							Not tested.
	IMR7828	49			51	3327	W	40°	Case full. Watch temp.
95 gr.	IMR7828	48			50	3368	W	45°	Case full. Watch temp.
100 gr.	IMR4895	39	3034	W				55°	
	IMR4064	41	3130	R				65°	
	H414	45	3040	R	48	3267	R	78°	Powder lot important.
	H380	42	3060	R	46	3228	R	55°	
	IMR4350	44	3147	R	45	3198	R	50°	
	H450	48	3073	R				85°	
	IMR7828	49	3161	R				55°	Compressed.
105 gr.	H414	44							
	IMR4350	44							
	H450	45							

(Note that neither PS magazine nor the author represents these loads to be safe under all circumstances. They are reported for information only purposes. The individual shooter will find that results will vary in different firearms, both as to results and safety).

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BOB JOURDAN

Continued

Dave,

Enclosed is a copy of an answer to a letter I received from James Ferguson of Wharton, Texas. He wrote last month about a .257 Weatherby and I answered it and sent you a copy. It looks like he gave up on the .257 Weatherby idea after my letter, and is now looking at the .257 Ackley Improved. He requested my ideas on setting up the rifle, and wanted my loading data on it. Since I didn't have a .257 Improved, I can't furnish the data. However, as you will see from the letter I've sent him, I now have the use of a .257 Improved even though it is a right-hand action on loan.

Thought you might be interested, for possible use in the magazine or not.

I've been getting several telephone calls each week concerning my various articles in the magazine. Also, a few letters. Thus far, all positive . . .

Thanks.

Bob Jourdan

James,

Appreciate your letter and happy to see you are enjoying my stuff in PS magazine. I am late in getting this answer off to you for a fine reason that you will fully understand: You caught me just starting the set-up of a test .257 Ackley Improved! It has been quite a story in itself, but what timing on your part . . . Naturally, I don't have shooting data on the .257 Ackley as yet, but it will be coming down the pike before long and will be in PS.

Before getting into your questions, let me fill you in on my Ackley project. I was looking for a .25 caliber rifle, left-hand, to rebuild into the .257 Improved when a friend, T.G. Birdwell, offered to trade out a few months use of his .257 Roberts rifle in return for me setting it up as an Ackley. What a deal! He saves the cost . . . I have the use. Deal made.

The rifle turned out to be a very old Herter's Company house brand Mauser from the 1960 period, made from low bidder parts. I had hunted with T.G. over the years and knew he used the rifle and even liked it. Then for the more recent few years I watched him try to shoot small groups with it at the range. No way. It averaged just under 2″ groups. He put it away.

When I got in to the action I found the Mauser safety lug had been acting as the bolt locking lug. The front locking lugs had about 15% of one touching the lug seat, and the other lug full floating. It had never been seated since it was built. Then other things showed up . . . action face not square, threads not straight, barrel bore not concentric, barrel bent in the middle by .025″, etc., etc., etc. No real way to assure the rifle could ever be made to be much of a target gun . . . but also no way that it could be hurt any more . . .

The old story, though, is to never look a gift horse in the mouth . . .

I test fired it yesterday and it didn't blow up. Now awaiting the RCBS loading dies, and then get started on load development and tests.

Enough on that, so now on to your questions. First, the barrel length for a .257 Improved. This must be approached based on the expected use of the rifle. There is an old saying put forth by Townson Whelen many years ago: "There are game hunters, and there are game shooters". Which group do we belong in? It seems that with passing time more and more of us fall in the "game shooter" category, described as those who do little or no searching for game by actually going out in the rough and walking up the game in their own domain. In other words, shooting from a blind, sometimes over a feed trough, or driving a vehicle to the shooting grounds and setting up either inside the vehicle or just outside it. No physical work. No carrying of a rifle very far. In this case, the longer rifle barrels work out fine. Barrels out to 30″ long are showing up, but they certainly are not being carried very far by the shooter. These barrels do give the very highest velocities, however. And I should point out that all the articles concerning ultra-high velocities over 4000 fps in the various calibers are talking about these extra long barrels. It doesn't take an experimenter long to find that very few cartridges or loads will exceed 4000 fps by much in 22″"barrels.

I have used barrels from 18″ to 26″ in the field and found that for my type of use, walking up the game in the big mountains, 22″is about ideal. But since I like high velocity, 24" is quite good. The 26″ barrels I have used were simply because of the higher velocity desire. They felt somewhat long and cumbersome but in rather open country they were alright.

Thus, my recommendation would be 24″ for most, and never over 26″ for hunting. For set-up shooting at targets, etc., start with the 26″ so as to have the higher velocity.

The action length for the .257 Improved will have to be the regular length as used for the .25-06, .270 or .30-06. The short actions can sometimes be made to handle the .257, but the bullets must be seated too far into the case to keep the overall length within the action length. This reduces the amount of powder capacity available, and defeats the purpose of the hot .257 Improved. The .257 can be loaded with an overall length of about 2.8″out to about 3.1″. The loading port of the short action Remington M700 is only 2.4″, and the magazine is only 2.8″. The longer action of the Browning A-bolt measures about 3.1″ for the port and 3.3″ for the magazine. Most all rifles for the .30-06 are this size.

When looking for a wildcat or improved .25 caliber it is important to know the case size by capacity and relate it to the known efficiency of that size. The only reliable way

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to get this size easily is to use water capacity to overflow. If you try to use the powder capacity to the shoulder or the neck, as stated in many articles in magazines other than PS, you must guess where the neck or shoulder starts, and then you have to guess whether or not the powder is loosely settled, normally settled, or packed in the case, and what type of powder was used. Altogether, too much guesswork . . .

Case efficiency has been pretty well worked out over the years by various experimenters. Efficiency means the thin line between good barrel life and good velocity, or poor barrel life and very high velocity. Also, it is commonly thought of as the amount of velocity gain per additional grain of powder used.

Every caliber has its own best efficiency level. For the .25 it is under 60 grains of water . . . yes, I've been told water is very hard to ignite with standard primers . . . As you go above that you begin to burn large quantities of powder for smaller and smaller velocity gains. This, then, equates directly to barrel burnout. In the 80 grain cases it is not uncommon to burn out the barrel while trying to find an accurate load. In one case comparing the little .250 Ackley to one of the largest wildcat .25s, it required 33 grains of powder to gain 300 fps!

Here is a quick rundown of some .25 caliber case capacities in grains of water:

.250-3000	45.5 grs.
.250 Ackley Imp.	51.9 grs.
.257 Roberts	52.4 grs.
.257 Ackley Imp.	59.3 grs.
.25-06	65.0 grs.
.25-06 Ackley Imp.	72.6 grs.
.257 Weatherby	85.6 grs.

Your question on making up a rifle for the .257 Ackley Improved depends on your planned use. If it is to be used for all general hunting, prairie dogs to elk, the rifling twist should be one turn in 10 inches so as to stabilize the 120 gr. bullets. While in theory this will cause the very light weight bullets of 75 grs. to be slightly less accurate, I have not found this to be true in real use. The best rule of thumb on rifling twist is when in doubt, go faster with the twist.

If the rifle is to be used only for targets and varmints, and on up to deer for that matter, a 12″ twist would do best. It will stabilize bullets through the 100 gr. weights, and at least in theory it will do very slightly better with the light bullets.

I have come to appreciate a slightly heavier barrel than what the fad of the last 20 years or so has been, at least in the hunting field. It is nice to have a light, .55″ at the muzzle, barrel if you are walking five to eight miles per day hunting. However, the .65″ barrel will shoot more accurate and will not be too heavy to carry. Then at about .75″ you get into the real good accuracy barrels. By the time the barrel reaches about .85″ at the muzzle, you probably won't want to walk far with it. So, again, it all depends on how you plan to use the rifle.

From handling several different actions for building new rifles, I have about come to the conclusion that the best is the Sako. I personally have Savage, Browning, Sako, Mauser, Ranger and Remington actions. If I had to rate them, I would put the Sako first and the Browning second.

For stocks I am slowly converting from wood to fiberglass. In wood you can end up with real show stocks, and I prefer Myrtle in the high grades only. In fiberglass there is no way to believe one would classify as a show model. On the other hand, they are quick to build and are strong and do not warp. Pretty? About like Gertie of Leadville Gulch . . .

For the scope on your .257 Improved, the B&L 6x24 sure is a great one for high power use, but their 2.5x10 in the low power end has non-accurate adjustments. The Leupold 3.5x10 is the best in that range, always with the adjustable objective.

This ought to confuse you pretty good for now. I am sending you my detail loading sheet on the excellent 6.5x06 Ackley Improved, which is the caliber I've been using more than others lately for big game. Actually, this case is too big for best efficiency in the 6.5mm, but my goal with it was to equal the .264 Winchester while avoiding the problems of the belted cases. It has succeeded quite well. My next experimental wildcat will be a slightly smaller 6.5mm, maybe an Improved 6.5x55, which should really be about the proper case size. As you know, the 6.5 is only .007″ bigger than the .257, so the case size should not be much larger than that of any good .25. My holdup is a rare thing . . . money . . .

I will have the loading chart on the .257 Improved before too long, depending on my available time, etc. Maybe by mid-summer . . .

Thanks again for your interest in my articles. I am answering letters and calls on them every week, and have just started on the PS staff, so don't know what the future might hold. Busy, busy . . . or gone . . .

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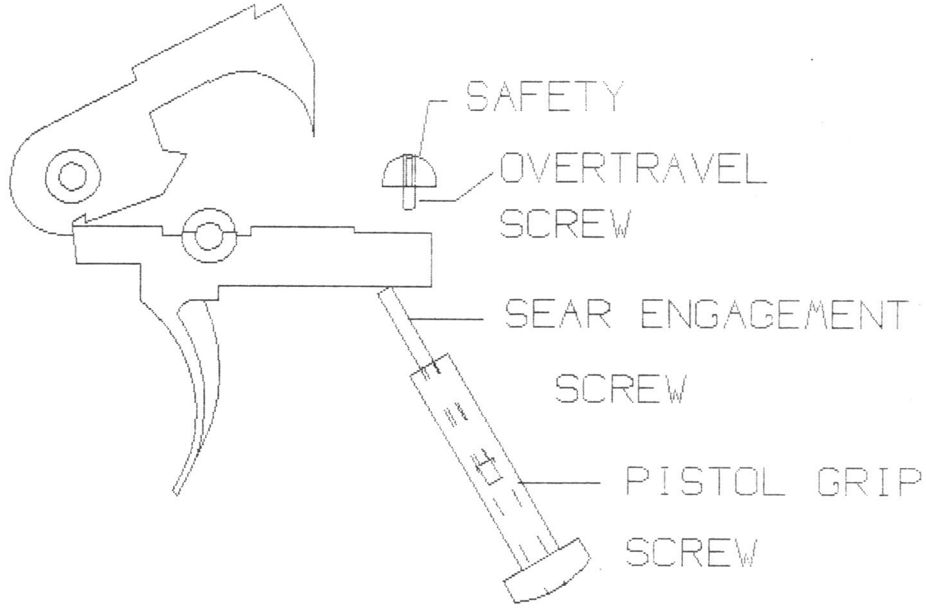
AR-15s

Dear Dave,

Just finished reading Jim Wills' comments on the AR-15 in Highpower Competition in your March issue. I can recall the AR-15 fever of several years ago when the "Cockroach Carbine" (you need at least .35 caliber for mice: Elmer told me so) was being touted as the save all-end all of the firearm world with prizes being offered for specific group sizes fired with it.

Here in New Hampshire, the AR-15 is a runaway winner in the highpower popularity contest. Wills mentions that class wins above expert or overall wins with this gun are nonexistent. A friend of mine, Trent Boggess used the H-BAR to place first in a statewide league of some 60 to 80 competitors shooting very high Master scores and frequently knocking on the door of High Master. More impressively, he used an H-BAR to earn his Distinguished Award, finishing it in grand style with either two or three open wins in the leg matches which include the 600 yard stage. His success with this rifle influenced other shooters to the point that at some of the league matches, it was possible to look up across the 15 firing points and rarely see more than three rifles that were not black. I was one of the oddballs, shooting a bolt gun in .223 to earn my master classification finishing third out of the same 60-80 shooters.

While the AR H-BAR has one disadvantage, light bullets at 600 yards (anyone considering this gun for 1000 yard is probably reading their copy of PRECISION SHOOTING from the comfort of a rubber room) it has more than enough advantages to offset that. Light weight (can be adjusted from 7 to 15 pounds as explained later) and almost nonexistent recoil make this the perfect rifle for smaller framed women and youngsters. Superb out of the box accuracy of the H-BAR would recommend it to anyone. For those who consider themselves "serious" competitors, in search of their distinguished award, how about the fact that the gun is allowed in leg matches, but 5.56 mm ammo has never been released for issue at these matches. Think about that one! You can show up at a leg match with your own custom tailored handloads, zeroed in your rifle at all ranges. Further, reduced loading costs and extended barrel life are nothing to sneer at.



Between us, we developed several modifications to the H-BAR which, while not altering the inherent accuracy of the gun, do allow the average shooter to shoot it more accurately. Many of these can be performed by the average gun hack at little or no expense.

The sights on the AR have been likened to looking at a fence post through a hula hoop. The front post is too wide and indistinct while the rear aperture(s) are of excessive diameter. The front post can be corrected by grinding (on a surface grinder, please, you will be disappointed with the results of a bench grinder) three sides and the top of the stock post. Start by squaring the rear face (choose one) of the post, being careful to align it with the plunger indent. Follow this by grinding the two sides and top so that they taper away from the now square rear face by 3 to 5 degrees. Width can be an individual preference but we found that .050 to .055 satisfied most people. Finish by cold bluing. The rear sight can be helped dramatically by filling both apertures with epoxy. When cured, set the entire rear sight in the vise of a mill and center drill and reopen the holes to about .050. By drilling one hole, flipping to the second aperture, moving the mill

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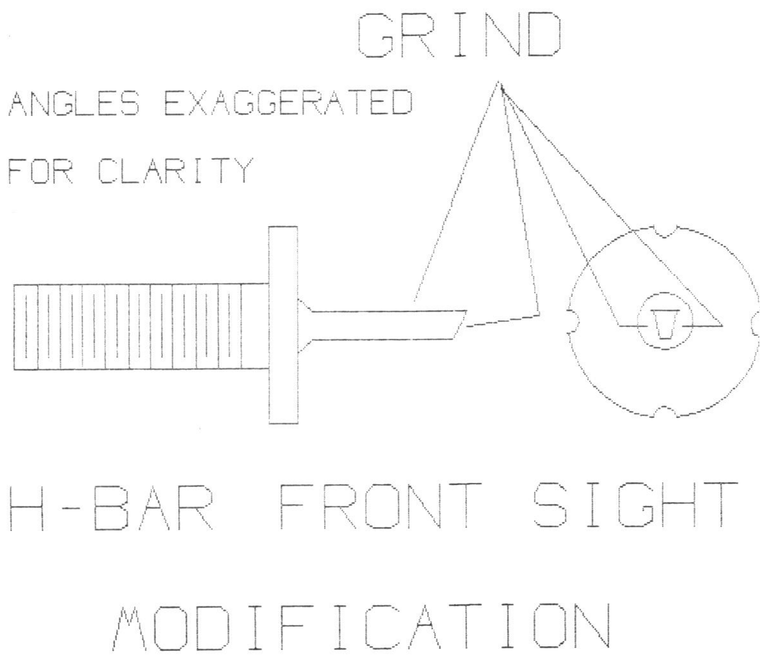

table by .003 (use a travel indicator, not the dials) and opening the second hole, you create 1/2 minute elevation and adjustments, similar to the system of the M-14 NM sights.

Now for the trigger. Remove the pistol grip and with the help of a lathe, drill lengthwise through and tap the pistol grip retaining screw. I believe I used a 5-44 thread. Now, using an appropriate allen head set screw of about 1″ length, you can adjust the sear engagement of the rifle by reaching through the pistol grip with an appropriately long allen wrench. This modification will yield an externally adjustable trigger, whose pull is far superior to the stock gun, but will affect the longevity of the trigger and hammer. It seems to accelerate the wear on the tips of the sear engagement surfaces and will yield doubling within about a thousand rounds. The doubling can be corrected by backing off on the set screw at the expense of the crisp trigger pull. I recommend genuine Colt hammer and trigger parts having found them to be more durable and higher quality than any of the aftermarket parts. The pull can be further improved by removing the safety, drawing its temper, drilling and tapping a small hole just off center and installing a set screw to catch one of the walls of the trigger extension and limit overtravel. If this isn't enough, try bending the legs of the trigger return spring to reduce its weight. And finally, on reassembly, use a dot of locktite on the ends of the trigger and hammer pins to keep these parts from rotating. (Editor: trigger modifications are not recommended per se by either the author or this publication).

With smallbore rifle being my first love, I have developed a fondness for 15 pound rifles. The AR can be brought up to acceptable playing weight without months at the training table. Remove the front hand guards and cut and bend pieces of lead flashing to fit inside them and around the barrel and gas tube. The lower half of the handguard will accommodate two full length pieces of lead sheet while the pieces in the top must be cut and fitted between the reinforcing ribs to provide clearance for the gas tube. Hold them in place with silicone adhesive/caulking.

As this will leave the rifle decidedly muzzle heavy (causing you to shoot low and wound most cockroaches in the feet) we go to work on the buttstock. Remove the buttplate and coat the inside of the buttstock cavity with a good layer of grease. (I used white lithium because it was what I had on the bench. Others would probably do as well.) Pour the cavity full of plaster of Paris, inserting a length of threaded rod through the center of this while still soft (the plaster, not you). When set, lock the threaded rod in a vise and a few taps on the buttstock against a protective wooden block will remove a perfect male image of the cavity. Use this form, again coated with grease, more plaster of Paris and an appropriate container to form a female image of the cavity. Let this mold dry thoroughly as pouring lead into a still moist plaster cavity will yield spectacular results with lead erupting over most of the basement and all of you. When dry, pour in your lead. Experiment with different lengths of ingots to vary the weight and balance. With care, the plaster mold will last for half a dozen ingots. If you don't achieve what you want in that time, use the male image to create another mold. In use, place the ingot into the buttstock cavity and pack the space behind it with styrene foam, plastic peanuts or anything else you can find that will keep it from shifting in the middle of your rapid string.

We experimented extensively with tightening the joint between the upper and lower receivers. We used shims. We milled cavities and glass bedded the two surfaces. We clamped the two receivers, line-reamed both pin holes and ground new oversize assembly pins to fit. None of these seemed to make the slightest difference. If you started with a 3/4 minute gun, you ended with a 3/4 minute gun. The only thing we found that appreciably affected the inherent accuracy of the gun was the installation of a premium grade barrel with a 1 in 9 twist rather than Colt's 1 in 7. Trent swears by Kreiger.

I hope these suggestions will help somebody out there. The AR-15 provides an inexpensive (relatively) starting point for new high power shooters and a little practice and effort can make them competitive. With almost total lack of recoil and excellent out of the box accuracy, the AR has a great deal to offer. The gun's single biggest limitation is the short sight radius. The light bullets put one at a relative disadvantage at 600 yards, but also teach one to read the wind in a hurry. Having used the .223 to learn the wind, I have now moved on to bigger and better things. I will be competing this year with a fast twist bolt gun chambered in 22-250.

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DAN LILJA

Dear Dave:

In the last few issues of PS I have written several letters and an article on long-range shooting and the optics used for this type of work. It is probably apparent that I have an interest in scopes and their quirks. As I mentioned, most of my long-range shooting experience has been with the Leupold scopes and of these, primarily with several 24x models and 6.5-20x variables. Many long range riflemen use the Unertl brand scope for this type of shooting for several reasons. One of the main reasons is the broad range of adjustment available with the externally adjustable type scopes.

My experience, as I indicated in a previous letter, with the Unertls was limited to a 24x 2″ target model some years ago. I did recently acquire a 24x Unertl programmer model though. Soon after getting this scope and before using it, I returned it to Unertl for a cleaning at a very reasonable cost. After the scope was returned, I mounted it on my 338-378 Weatherby Mag. I was curious if the external adjustment system was as good as so many claimed. As I had been told many times and read, a mount spacing of 7.2″ was required for 1/4 minute adjustments. Indeed, the Unertl literature states that "... 7.2 inch base separation for true 1/4 min. click adjustments" is required.

After that scope came back, I got out a depth micrometer and took a measurement from the top of the vertical adjustment knob to the machined aluminum mount. I then dialed in some clicks to see how much it moved. I found that each click was worth .0005″ of movement. One revolution of the knob was worth .025″. A little bit of math told me how much one click should be worth at 100 yards. To determine this, I used a simple formula. The amount of actual movement one click moves the adjustment pad is divided by the mount spacing. This number is then multiplied by the number of inches in one hundred yards. Putting the numbers into the equation it looks like $(.0005 \div 7.2) \times 3600 = .250''$. That works out to an even quarter inch of movement per click at 100 yards. In minute of angle or MOA it is $.250/1.047 = .239$ MOA. (Incidentally, this formula can be used to calculate the correct amount to elevate a rear scope ring with an internally adjustable scope to get the maximum amount of up adjustment.)

The numbers didn't quite look right. If one click of the scope knob was to move the cross hair one quarter MOA the amount of movement should be .262″ not .250″. According to my calculations, a spacing of 6.877″ or about 6 7/8″ should be used for true MOA adjustments.

To find out, I checked the scope movement out on a board with one inch increments marked on it at 100 yards. With a 6 7/8″ spacing, 100 clicks were worth 25.5″ or .255″ per click. At a 7.2″ spacing the same 100 clicks moved the cross hair 24.5″ or .245″ per click. Neither of these measurements were what I had expected or what the math said they should be. One hundred clicks should have moved the cross hair 26.2″ for true MOA.

As I mentioned in an earlier letter, none of this is very important except to the long-range rifleman. To him however, it is very important. It can mean the difference between getting on paper at 1000 yards, or hitting a distant object. I would be interested in what others may have found with the externally adjustable system. The main question I have is, just how much is one click worth with the 7.2″ spacing?

Best regards,
Dan Lilja

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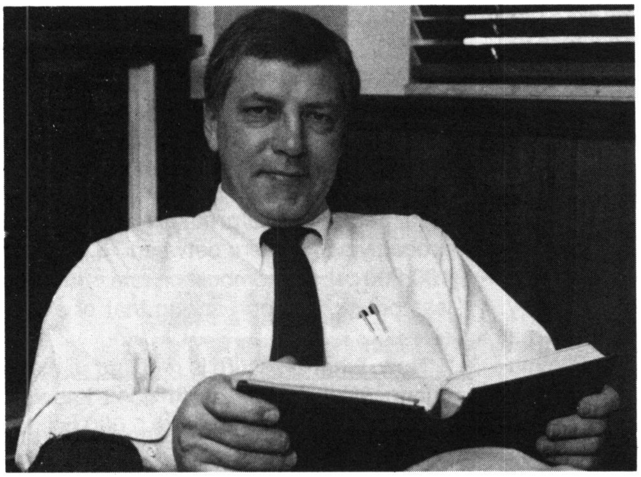

AN INQUIRY INTO THE MYSTERIES OF THE SECONDARY EXPLOSION EFFECT, PRESSURE EXCURSIONS AND SHOCK WAVES, BEING A BOOK REVIEW

BY BUDDY R. SALYER

FIREARMS PRESSURE FACTORS. Wolfe Publishing Company, 6471 Airpark Drive, Prescott, Arizona, 86301, 162 pages, $14.00 plus s&h.

This book is a compilation of a series of articles that appeared in *Handloader* magazine during the late 1960's and the 1980's. It consists of three sections: the first three articles are commentary on the Secondary Explosion Effect (S.E.E.) The next thirteen articles are the results of a major study on factors affecting pressure in firearms, conducted by Dr. Lloyd E. Brownell at the University of Michigan. The last five articles deal primarily with methods of measuring pressure in firearms and the conclusions that can be drawn from the data.

Before you rush out and purchase this work expecting to learn everything you ever wanted to know about pressure in firearms, you should be aware that this is not Readers' Digest material. Everything you ever wanted to know is, in fact, there, but you need some knowledge of fairly advanced mathematics to fully extract the information. Brownell was a physicist, and he did not undertake this project to simply see if he could make a rifle come apart at the seams. A lot of people have done that and not learned a damned thing in the process. His aim was to discover — and measure — every thing he could about factors which affect pressure — powder, barrels, primers, bullets, whatever. The work was thorough within the limits of his financial backing, but it isn't the kind of stuff published in Guns and Ammo. The book is useful to anyone desiring to know more about the many factors which have a bearing on pressure, but an effort to master it is required.

NOW

The Secondary Explosion Effect has interested me for several years. I have wondered why reduced loads of slow burning powder in large cases sometimes cause violent explosions in rifles. Many writers have tried to explain it, with several coming up with likely explanations. This book got me to thinking about it again.

In the first chapter, Col. G.O. Ashley gives the following explanation: There is no such thing as S.E.E. **Period.** Ashley conducted an experiment in which he fired loads in two different rifles, each time reducing the powder charge. The experiment was designed to use three powders, but after loads with two of the powders were reduced to the point where bullets jammed in the barrels, he terminated his work and did not complete his study using the third powder. At any rate, since neither of his rifles exploded, he concluded that S.E.E. is a myth. Unfortunately, he left out one factor that has been found consistent in these pressure excursions: large capacity cases. His test cartridges were the .25-06 and the .25-6.5mm Remington Magnum. Although I am no authority on magnum cartridges, I don't consider either of these to qualify as "large capacity cases." Each has a maximum powder charge of about 55 grains, which doesn't even approach the loads used in some of the "true" magnums. As will be discussed below, I don't believe that destructive S.E.E. is likely to occur in cases of this size, regardless of the powder or the load size.

His error was in assuming that if S.E.E. existed, it would invariably occur every time potential conditions for the phenomena existed. In theory, this may be true, but in order to write the correct equation for the occurrence, we have to know all the right (ie, wrong) conditions. Since we have never, to my knowledge, done a comprehensive study of S.E.E., we don't know all the factors that were common to all of them: certainly we know some of the powders, and some of the primers, and cases, but we don't know barrel conditions, bullets, ambient temperature, and so on. We simply don't know enough at this point to identify all the essential factors necessary to **predict** an explosion. Actually, we probably have been confronting this problem for a long time without being aware of it — when we fire a round that shows some signs of pressure, but does not, in fact, wreck the gun, we do not connect it with S.E.E., when it may actually have been in play. The strength of modern rifles is such that destruction is unlikely unless loads are designed with the intent to test the ultimate strength of the gun.

In point of fact, Ashley indicated that he showed some pressure signs (flattened primer, difficult extraction) on one reduced load, but since his rifle did not disintegrate, he assumed that S.E.E. did not occur.

Ashley's article is followed by two articles in which Brownell suggests that the cause of the problem is shock waves created inside the case. To quote his article, "The localized nature of ignition tends to set up pressure waves which can be amplified by passing over burning propellant, and which **may** develop into shock waves." (Emphasis added). In another place, he quotes from Corner's "Theory of the Internal Ballistics of Guns: "If we have a compressible medium such as powder gas and an irregularity in the pressure from point to point, the velocity of propagation of the higher pressure region is greater than that in the lower pressure region. This is true because the increase in pressure raises the gas temperature which in turn raises the sonic velocity. Thus the high pressure regions travel as a front and the regions of higher pressure become steeper and eventually form into sudden jumps of pressure. Strictly speaking, the rise of pressure occurs in a thin but finite zone. A shock wave, then, is a single, almost discontinuous jump of pressure leaving behind it gas at higher temperature."

What Brownell concluded, as I understand it, is this: If the powder is not ignited uniformly, one location of the case will have higher pressure and temperature than another location (ie, an instantaneous reading at the case head may register, say, 50,000

Continued on next page

BUDDY R. SALYER

Continued

psi, while a reading at the neck may be 30,000 psi. The "front" of this high pressure region will move as a shock wave toward the low pressure region. As it hits the other end of the case, it will bounce back in the opposite direction. If the high pressure region originates in the middle of the case, and if this front moves front and back, and is reflected, at some point the two high pressure points will meet, each imposing its temperature and pressure on the other. This, he says, would effectively double the temperature and pressure at one region of the case and **detonate** the powder, as in an explosive.

While I am more likely to accept the Brownell view than Ashley's, I am not convinced that either is correct. Ashley's is not scientific enough to satisfy me; his methodology is faulty. Brownell's articles — well, I have this lawyer's inclination to distrust anything I can't understand, and I don't understand shock waves in a rifle cartridge. That's not quite correct: I can conceptualize his explanation, but it doesn't make sense to me. The studies and sources he relied on were mainly derived from experimentation with artillery pieces, and I am not convinced that you can transfer principles that apply to a 4-gallon cartridge case and 55-pound charge of powder to a rifle case. Maybe, for my part, Brownell's conclusions are too complicated for what should be explainable by much simpler theories.

I don't purport to be a physicist or mathematician, but I have a fairly good mind that can comprehend some practical facts about physical laws. I have my own theory on the cause of S.E.E., and it is my purpose here to outline that theory, mainly by presenting a scenario that seems to me to offer a likely explanation. [Unlike other journals, we here at Precision Shooting are not afraid to expose our ignorance. We readily confess the futility of denying it]. More important, it is my hope that by espousing a theory, I can provoke those more knowledgeable than I to share with us.

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(I must point out here that this article was started about six months ago. After it was nearly completed, in basically the form you see it, I concluded that I needed some **harder** facts by which to measure my theory. Thus, I wrote to about ten companies that manufacture gunpowder or loaded ammunition — folks like Winchester and Federal and such — asking them for information. The letter I sent out is reproduced at the end of this article, and I don't feel it asks for any proprietary information, or anything that is likely to hurt anyone. At any rate, I was ignored with astounding consistency: I received precisely one reply, and the only question answered was the ignition temperature of gunpowder. Therefore, this article goes ahead, and perhaps we will eventually get some comments.)

Gunpowder may or may not be a propellant, depending on the conditions in which it burns. Under some conditions, it can act like an explosive. Early in our reloading careers, we have all placed powder in an ashtray and ignited it. Not very impressive — it just lays there and burns.

In order to act as a propellant, gunpowder must be burned in a closed space at or above a minimum pressure and temperature. Unless those conditions exist, it simply burns, in much the same way that paper and gasoline burn. If that pressure and temperature are reached, it propels; that is, its rate of combustion is increased greatly. Obviously, 50 grains of IMR 4895 in a 105mm howitzer case is going to burn the same way it would in your ash tray; it would not produce enough pressure or temperature to act like a propellant. Yet, if the temperature and pressure of the howitzer case were elevated prior to igniting the powder, it would "propel."

Another thing we are told is that the higher the pressure and temperature, the faster gunpowder burns. If the proper amount were ignited at atmospheric pressure in a closed container that could hold an infinite amount of pressure, and the pressure and temperature minutely graphed, we would see a rise in temperature and pressure that starts in nearly a horizontal line and then curves upwards until it is nearly vertical. The rise is exponential, rather than linear. Under high temperature/pressure conditions, probably somewhere between 75,000 and 100,000 psi, the combustion rate of smokeless powder is approaching that of explosives.

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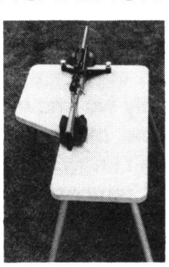

Now, what pressure is required to make gunpowder a propellant, I don't know. It may be 500 psi or it may be 5,000 psi. No one can, or will, tell me. Therefore, I am going to assume some figures for the purpose of illustrating my theory. The numbers used here may have no relation to reality, but they serve the purpose.

The second thing that is needed is ignition temperature. Oddly enough, that temperature is very low: single-base powders ignite at about 315 degrees C., and double-base powders ignite at about 150-160 degrees C. Even when attenuated within the case, any primer on the market will produce that temperature, since its own combustion temperature is considerably higher than that.

Primers must be designed to fulfill their functions under very specific conditions. Obviously, a rifle primer does not meet the demands of an artillery case, and we all know that a large pistol primer won't get the job done in an 8mm Remington Magnum case with IMR 7828. Primers must fulfill the following functions:

1. Produce high-temperature gases and/or solid particles to insure rapid ignition at all specified ambient temperature conditions without hangfires or misfires.
2. The primer gas/flame/particles must be distributed uniformly along the axis of the propellant bed.
3. The energy release into the propellant must be highly reproducible to minimize variation in charge reaction.
4. The igniter gases and initial propellant combustion products must pressurize the chamber rapidly to a level sufficiently high to promote good powder combustion.

In a "normal" load, we know that propulsion takes place very quickly: we pull the trigger and the bullet is gone. The critical pressure and temperature levels are reached instantaneously, or what appears to be instantaneously.

These critical levels are, of course, created by the primer, which not only supplies the heat to ignite the powder but also the pressure, which is a result of the expansion of the gas caused by the combustion of the primer material in a closed chamber.

As will be seen, the Secondary Explosion Effect is most likely caused by the primer's failure to create critical conditions in the chamber at the moment of firing. **However, it must not be concluded that there is some defect in the design, material or workmanship of the manufacturer who made the primers.** Rather, the primer was not designed to be used under the conditions that create S.E.E.: reduced loads of slow burning powder in large cartridges. The primers are designed to operate under normal conditions; ie, full, or nearly full, cases. **When we start reducing our powder load below that listed in the manuals, we are approaching conditions that were not contemplated — nor recommended — by the primer maker.**

Certainly, it would be possible for Federal or Remington to develop primers that would fill the need (if there is a need) of igniting small charges of slow powder in large cases, but that might create more hazards than it eliminates. Such a primer might result on dangerously high pressures in normal loads of powder.

Several physical laws of gases must be understood. The first is that the pressure of a gas is inversely proportional to the volume

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BUDDY R. SALYER

Continued

of a container in which it is held. Decreasing volume increases pressure, and vice versa. For example, if we pump air into a five gallon can to a pressure of 20 psi, and then pump that same air into a one gallon can, we will have a pressure of 100 psi. By the same token, if we then transfer that same air to a ten gallon container, the pressure will be 10 psi.

The second law of gases is that the pressure of a gas is directly proportional to its temperature. If we seal a container of air at 70 degrees, the pressure inside the container will be about 14 psi, because that is atmospheric pressure. However, there is no "pressure" pushing out or in, because the pressure outside the container is equal to that inside. If we then heat the air in the container to 140 degrees, the pressure will double to about 28 psi. If we then reduce the temperature to 35 degrees, the pressure will drop to about 7 psi.

The third law of gases is that when a gas is compressed (quickly), it is heated. This is the principal on which the Diesel engine operates: The rising piston compresses the air, which is heated to a temperature high enough (at least 750 degrees F.) to ignite the fuel. At that point, the fuel is injected into the chamber and immediately (well, almost) ignites, creating pressure and driving the piston down. As a matter of interest and illustration, in a Diesel engine with a compression ratio of 22-1, the compression pressure would be about 800 psi and the air temperature would be about 1700-1800 degrees F.

Based on the foregoing, I am not inclined to agree with those who suggest that in low powder loads, where the powder lies in the lower half of the case, erratic ignition results from the primer flame flowing across the surface of the load. In the discussion below, I assume for purposes of illustration that a primer would generates several thousand pounds of pressure in an empty case. That may be exceedingly high. Yet, if it produces only 800 psi, it would generate about 1800 degrees F., which is several times the ignition point of powder. If we add to that the heat generated by the combustion of the primer, I think it is safe to assume that the immediate temperature in the case is at least 2,500 degrees F.

It is acknowledged that gunpowder may not react to air temperature the same way that Diesel fuel does. At the point of injection, Diesel fuel is (1) sprayed, creating droplets very much smaller than powder grains; (2) the temperature of the air will cause the fuel to vaporize even further; and (3) those droplets are not coated with a deterrent, as is gunpowder. When high temperature is generated in a charge of powder, there is, I assume, a measurable delay while the powder absorbs enough heat to ignite.

In any event, in a charge of powder that lies in the lower half of the case, I am satisfied that the blast of the primer will disperse powder grains to all parts of the case. What with the turbulence and the grains bouncing off each other and off the case, I am convinced that the grains are all equally exposed to the same temperature and pressure. It doesn't just lie there. This would not be the case with a full or compressed load, but, then, we don't usually encounter S.E.E. under those conditions. For this reason, I am not convinced that erratic ignition results from the location of the powder.

For this discussion, we are going to assume that the critical pressure for making our powder act as a propellant is 10,000 psi.

If we seal the mouth of an empty 8mm Remington Magnum case and then fire the primer, we may obtain a pressure of, say, 3,000 psi. If we then load an identical case to the neck with powder, weigh it, fill it up with water and weigh it again, we may find that the unoccupied air space of the case is 20 percent of its capacity. If we fire the primer with an inert powder with the case mouth sealed, then we should achieve a pressure of about 15,000 psi, more than the critical level to make the powder act like a propellant. When the primer pops on a full case, we instantly have the minimum pressure to support propulsion.

If we fire the same brand of primer in an empty .308 Winchester case, we may find that the pressure is 6,000 psi, because the Winchester case would have approximately one half the capacity of the magnum case. If the unoccupied air space of a full .308 case is 20 percent, then a primer fired in it with inert powder would generate a pressure of about 30,000 psi. Again, the primer would provide instant critical pressure in a full case.

Suppose, then, that we empty half the powder from the 8mm Magnum case and fire the primer again. The pressure should only reach about 6,000 psi, which is not enough to achieve propulsion. Certainly, it will burn, but it is going to burn initially as it does in your ashtray — heat, flame and smoke, but no zip. As it burns, its gases expand and raise the pressure in the case. The rising pressure, in and of itself, will increase the temperature. The pressure will rise until the critical level is reached and then propulsion will occur. This, I believe, is what is happening with **some** hangfires.

If we fire a full case of powder, the primer will instantly create sufficient pressure and temperature to support propulsion. The powder is "propelling" from the very beginning.

In the meantime, what has happened? Well, it seems self evident to me that 6,000 psi is sufficient to drive a bullet into the bore, where it will stop until sufficient pressure is generated to move it again. We must realize that a bullet movement of only a couple of inches into the bore will result in a substantial and immediate decrease in the chamber pressure, depending on the chamber capacity, bore diameter and distance of travel. An example: Assume a primer that will instantly and completely burn before the bullet has moved. In a straight case, three inches long, a movement of the bullet three inches into the bore would cut the pressure in half — instantly and momentarily.

What I think happens, then, is this: As we decrease the powder charge in a large case, we reach the point where the pressure of the primer may not be sufficient to create propulsion conditions, or, if so, only marginally. In either event, the bullet is driven into the bore of the rifle where it momentarily lodges.

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If the initial pressure was insufficient to cause the powder to propel, the bullet will remain in the bore while pressure and temperature rise enough to cause the powder to take off. When it reaches that point — where it becomes a propellant — we have effectively fired a rifle with an obstructed bore.

On the other hand, if there was initially enough pressure to cause propulsion, then the speed at which the bullet enters the bore (reducing the chamber pressure) may be faster than the pressure is rising from the combustion of the powder, momentarily dropping the pressure below the critical level. The powder then has to burn long enough to generate propulsion pressure before it starts to push again. This would most likely happen with a very slow powder.

In either event we are firing a rifle with an obstructed bore. Sometimes when bullets become lodged, they can be pushed out with relative ease; others are lodged so tightly that it is a real exercise in muscle and finesse to get them out. We have all seen pictures of the results: bulged barrels, split chambers, busted receivers, broken lugs.

As the pressure starts to rise in the barrel, it will eventually reach a point where it is sufficient to push the bullet. However, we are in a situation where the pressure is rising faster that the bullet is moving, tending to make the pressure spike, rising at an exponential rate rather than linear. If the bullet is lodged really tightly — say, it has just been pushed to the point where it is touching the lands — there could be very significant resistance to movement.

In studies done with both small arms and artillery, it has been shown that "engraving" — the passage of the bullet from the point where any part of the bullet first touches the lands to the point where all bearing surfaces have been cut — results in a pressure jump. That pressure will be relieved after engraving is finished, for resistance is decreased from there on out.

In twenty-five words or less, the idea is this: the primer blows the bullet into the bore without propulsion conditions being met. The bullet stops. As propulsion conditions are met, the temperature and pressure rise. They increase faster than the bullet is moved, and as they rise, the **rate** of increase increases. The curve turns upward and all hell breaks loose.

If this theory is correct, then the conditions for S.E.E. are primarily met when we reduce the bulk of the powder to a level that the pressure from the primer is insufficient to sustain a propulsive rate of combustion.

I think several factors contribute to S.E.E. The first is the speed of the powder. If we shoot a reduced load of fast powder (say, something appropriate for a pistol or shotgun) we may not have propulsive pressure in the chamber when the bullet starts to move. However, the pressure rise from the burning powder may be quicker than the movement of the bullet into the bore. Propulsive pressure may be reached before the bullet comes to a complete stop. The effects of a pressure rise behind a moving bullet, as opposed to a lodged bullet, should be self evident.

Without getting into too much detail, other factors which I think have a bearing are bullet weight; bullet bearing surface; bullet diameter/bore diameter ratio; the condition of the bore; whether the bullet is lead or jacketed; and the primer.

Certainly, a heavy bullet is going to offer more resistance to being moved by a pressure rise than a light one. How much difference there would be from weight alone, I cannot calculate.

The bearing surface of a bullet, I suspect, contributes more to the S.E.E. than bullet weight alone. The friction between the bullet and barrel will be directly proportional to how much bullet is actually touching the bore. Given one bore and one bullet diameter and one bullet material, a shorter bullet could be moved easier than a long one (ie, one that has a longer bearing surface).

A bullet that has a greater diameter than the bore will, of course, be swaged into the barrel, offering more resistance to movement than one which has a diameter exactly at or less than bore diameter.

Presumably, a new, clean, even wet bore would enable a bullet to move easier than a dry/pitted/dirty bore.

I have no data on this, but instincts tell me that lead bullets would encounter less resistance to movement in any given barrel than a jacketed bullet.

Here is something to ponder. Under these small charge/slow powder/large case conditions, the primer may adequately meet one of the two requirements — temperature and pressure, but not both. Assume, if you will, that the required temperature for complete **ignition** is 1200 degrees, and the pressure required for propulsion is 3,000 psi. If the primer generates 800 psi, the temperature would be about 1,800 degrees, but the pressure would be far short of that needed to cause propulsive burning.

* * * * * * * * * * * *

Continued on next page

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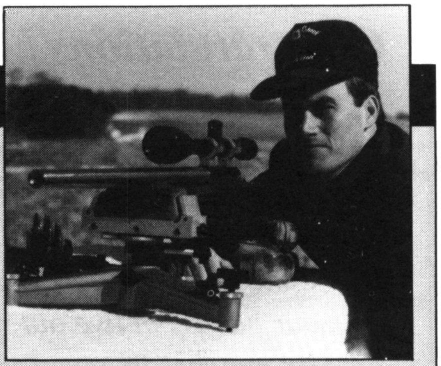

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BUDDY R. SALYER

Continued

The letter I sent out is set out below:

June 27, 1990

(ADDRESSEE)

Gentlemen:

I am preparing an article that is intended to discuss the current state of knowledge about the causes of the Secondary Explosion Effect (ie, pressure excursions that sometimes occur with reduced amounts of slow burning powder in large cases). In doing this, I wish to present some theories of my own about the cause IF certain data tends to support my ideas.

In doing this, I realize that in the past there has been disagreement among a number of writers (some qualified, some not) about the cause of this occasional problem. It may very well be that there is not currently any consensus as to the cause. The purpose of the article is, ultimately, to issue a cautionary note to handloaders. I know that I was a handloader for several years before I became aware of it, and I think topics regarding safety need to be brought up in the shooting press periodically to "catch up" those who have recently adopted the hobby.

As a company that is or has been in the business of manufacturing gunpowder, ammunition or primers, you have access to research data that is not widely published, but which would be useful in my article. Because of your particular business, you may have the answers to some of my questions, but not others. Nevertheless, I request that you provide me with the following information, if the answers to the questions are known:

1. I would like to have either copies of, or references to, publications known to you which have discussed this topic, or any of the questions below.

2. I would like to receive any statement or explanation that your company currently supports as to the cause of S.E.E, or whether you even recognize it to be a "problem."

3. It is taught in the literature that gunpowder will act as a propellant only when it reaches a certain pressure; otherwise, it is merely a flammable solid. Question: at what pressure does gunpowder begin to act as a propellant?

4. It is taught in the literature that as pressure increases inside the cartridge case, the rate of combustion increases, which in turn increases the rate at which pressure rises. The result is that the rate of increase in pressure is exponential rather than linear. Are there any studies that show tables/charts/formulas to demonstrate the relationship between pressure and rate of combustion, and vice versa? If so, please send copies or references.

5. Is there a maximum pressure at which gunpowder, for some reason, will cease to burn? If so, what pressure and why?

6. What is the ignition temperature of gunpowder?

7. If gunpowder needs pressure to act as a propellant, then the primer presumably furnishes the initial catalyst when it fires. I am curious to know how much pressure would be created in various empty and sealed cartridge cases by the action of the primer alone. (ex: a primer in a sealed empty .308 Winchester case would generate "X" amount of pressure.) I realize that the answer would depend on several variables, not the least of which would be the brand of primer. Is there any information along this line?

8. If a charge of gunpowder were ignited under appropriate pressures and temperatures to cause it to act as a propellant, and there was a radical drop in pressure, though not temperature, so that the pressure was less than that required to support its propellant properties, what would be the result? Would it continue to burn, or **could** it be extinguished?

9. New gunpowder apparently is rather plastic in its physical properties. I understand that as it ages, particularly if it is not kept properly sealed, it tends to become brittle as the ether and other solvents evaporate. Is it conceivable that, given sufficiently brittle powder (say, H5010) that the shock of the primer and the powder grains colliding with the cartridge case, that the grains could be broken substantially smaller, thus effectively converting H5010 into, say, the equivalent of IMR 4227?

10. Is there any data showing the instantaneous temperature created in cartridge cases by the firing of the primer?

I realize that not everyone will have answers to all the questions posed here. However, I would appreciate you helping with any that fall within your area of expertise.

Sincerely,
Buddy R. Salyer
Highpower Editor
Precision Shooting Magazine
151 East Main Street
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DAVE MILOSEVICH

Dear Buddy,

My introduction to Precision Shooting took place last weekend. A bunch of us were standing around at the California State Long Range Championship waiting for the rain to ease up a little prior to starting the match. One of the competitors pulled out the February issue and read your article on assembling a 1000 yard prone rifle.

I have to tell you that your article made the rain induced delay one heck of a lot more fun than most of the rest of the match. California's drought just had to end on this weekend with rain and full value, 20 plus mile per hour, cross winds.

We all had a good time "critiquing" your rifle, but let me say that without folks who are willing to push the envelope, we'd never make any progress. In that context, "good show . . . way to go . . . keep it up".

As you noticed the first time you got into position with that rifle, balance is a key attribute of a rifle that is going to be fired while held in the shooter's hands. "Balance" extends beyond the point where the mass is equal on both sides.

"Balance" is the reason that .308″ is a popular bullet diameter for 1000 yard prone shooting. "Balance" is the reason that 190 to 220 grains is a popular range of bullet weight. "Balance" is the reason that case capacity hovers between .30-338 and .300 Winchester. "Balance" is the reason that popular barrel lengths range between 26 and 28 inches and muzzle diameters range from .750 to .900 inches.

None of the above "balances" is the "best" solution to delivering a bullet to a point in space 1000 yards away. But when all things are taken into account, the "balances" represent the best chance a good prone competitor will have in coming close.

Sure, there are many exceptions to the norm that turn out to work very well for the individuals who employ them. David Tubb could wake up one morning and decide that the 7.7 Jap necked to .232 inches is just the ticket, build one and go off to win the Highpower Championship with it. You, me, and Harve would probably not have near the "luck" that David would, however. All of this is not to say that we prone/position shooters should not try to employ the "best" characteristics of an accurate rifle/ammo/sight system where possible. If I may offer my own humble rifle as an example of compromise and balance. Many of the features of this rifle were inspired by the techniques employed by people who, I think, may read Precision Shooting, I.E. benchrest shooters.

WANTED

40-X ACTIONS, STOCKS,
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AC 512 625-1342 afternoons

Caliber: .300 Winchester Magnum
Action: Hart 2A
Trigger: Remington 700
Barrel: Schneider .3077″, four groove, 27″, .900″ muzzle, 1.2″x 4″ breech.
Stock: McMillan fiberglass, 1411 style, adjustable buttplate and cheekpiece.
Scope: Leupold, 24X, crosshair reticule.
Mounts: Weaver bases and rings.
Rear Sight: Warner #1 (Redfield base for Remington Model 37)
Front Sight: Tompkins (Redfield .175″ base)
Gunsmith: R.W. Hart, Inc.

Brass: W-W, necks turned to wall thickness of .012″
Bullet: 190 grain Sierra Matchking, seated .010″ short of the lands
Powder: 67.0 grains of IMR 4350
Primer: Federal 210M
Dies: Bonanza Benchrest (full length sizer)

The action is glued in. The bolt does not have an ejector. The trigger is set to about two pounds.

There are some refinements that would be nice when it comes time to rebarrel. The new barrel will be a little lighter with a .800″ muzzle. The scope could use a small dot, one eighth or one quarter . . . I have not made up my mind yet. The bolt needs an ejector. (The port of a Hart 2A was not designed to accommodate a .300 Winchester case and a finger at the same time.) The trigger could be a little lighter.

As you can see, this is a rather ho-hum affair by pushing-the-envelope standards. When I first received it, four years ago, I thought it was a pretty ho-hum affair as far as accuracy goes too. During load development, it would shoot decent groups at 200 yards (about 1.25 to 1.75) but at 1000 yards I'd get unexplained 8's and 9's. So it wound up sitting in the safe for a couple of years.

I had a sneaking suspicion that primers might be the problem so when I bought a new case of 210M's for the .308 Winchester NRA Match Rifle, I gave them a try in this rifle. The improvement at 1000 yards was amazing. Last Saturday during the team match, with Eric St. John coaching, the rifle held better than X ring elevation. This was with 8-9 minutes of left wind on the scope and holding anywhere from center, to 9 line at 9 o'clock. We lost 2 points to wind and 1 to bad letoff on my part.

In the Arizona State Highpower Championship I shot a 200-7X in the individual scope match and a 198-12X in the team. We will not discuss my iron sight scores. I too have a hard time finding the right target to shoot at. (There may be a solution for us in that regard. Call Otto Weber at 503-747-0458 PST, and ask for one of his front sight lens inserts. Buzzard Eye? Tiger Eye? Sparrow Eye? I forget. Put in a front aperture about 8% bigger than the one you normally like and stick this gizmo in front of it. Beware, it may change your zero, a lot!)

The point of all this is, that a "balanced" rifle enables someone like myself, (a middle aged desk operator, whose idea of exercise is adding ice to his Manhattans and considers the major food groups to be nicotine, caffeine, sugar, and chocolate), who hates to handload, to shoot the occasional good score without experiencing pain in the process. Another advantage is that this "balanced" rifle can shoot three 20 shot matches in one day without cleaning and without degrading accuracy. Also it can be shot in 45 to 95 degree weather without concern over erratic pressure or degradation of accuracy.

I'm sure all you bench resters could have a lot of fun evaluating our rifles and loads and accuracy standards and marksmanship techniques. But that is just another benefit of dialog between the disciplines, fun!

Dave Milosevich
2215 Saybrook Lane
Costa Mesa, CA 92627-1676

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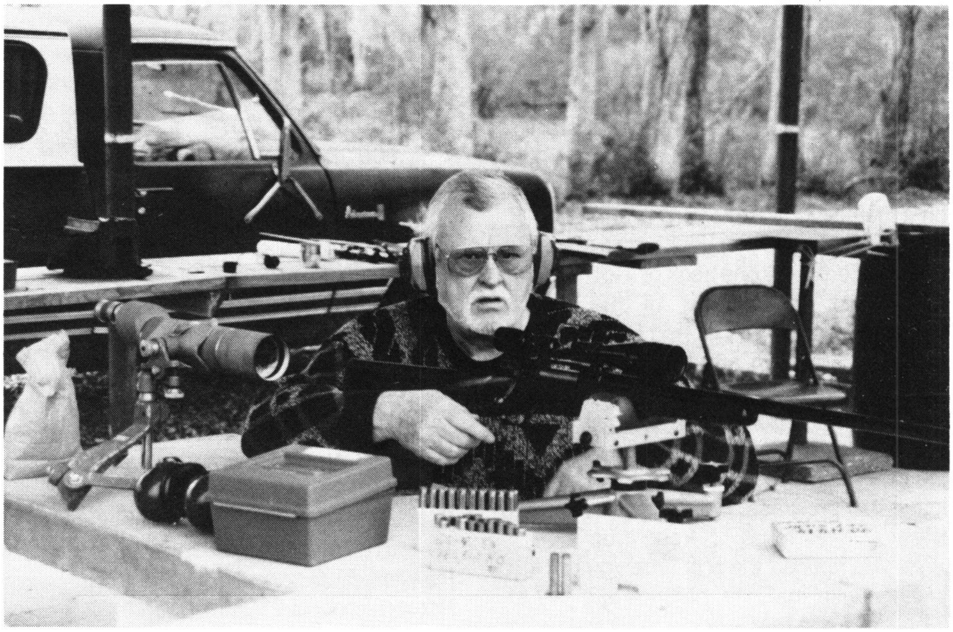

Johnny Dunn, a gun crank of many years, shooting my 6mm Remington. This gun has trued Mauser action with PAC-NOR barrel. The scope is the new Weaver 15 power. An excellent glass for varmints but it could use a smaller crosshair.

Dear Dave,

Being an old gun nut and wildcatter from many moons past, I certainly enjoyed Rick Kayser's piece in the February issue of Precision Shooting. Indeed, there are many of us who have searched for years in pursuit of the perfect long range varmint cartridge.

I know that our good Brother Mr. Kayser must be a grand fellow who no doubt is full of ideals and sincerity. However some of his recommendations and comments gave me pause! He wrote of putting together a rifle that would hit rockchucks and prairie dogs "past the 500 yard mark **consistently**"! Mercy! Now sports fans, just in case you tuned in only yesterday, "past" 500 yards is a mighty fer piece. I have been knocking around the powder keg for quite a few years too. In fact I won second place at a 1000 meter shoot out way up yonder in British Columbia with a 'sporter' weight rifle yet! This fact should say a thing or two about my shooting ability (to say nothing about the thousands of ground critters I've knocked over in the past thirty five years between Alaska and New York) but darned if I can hit anything much smaller than a big black mule 'consistently' past 500 yards! Now wait a minute. If I knew the exact range and had zeroed my fowling piece at that precise distance then I may (may) be able to hit a prairie dog past 500 yards "consistently" during leap years! And only then if the wind wasn't kicking up a dust storm. (During most of my sojourns into prairie dog country the wind usually blew so hard that large trace chains stuck out 90 degrees to the fence post).

It seems that Wildcatting may be enjoying sort of a rebirth. For this I am really thrilled but I must say that I see nothing new these days on behalf of wildcatting. Big fat cartridge cases and small bullets have been around for quite a while. Way back in the early 1950's when I was stationed in Sioux City, Iowa serving in the United States Air Force, I fell in with two rabid gun cranks namely Dr. J.D. Lutton and a gunsmith named Glen Tennis. These two wonderful old friends have long since left the range but they exposed me to what wildcatting was about and helped me off to a great start in what has been my only real hobby over the past 37 years. These two fellows had 250 Ackley magnums. Glen's was the most impressive with its long 29 inch Ackley barrel. This rig was glass bedded and free floated and it was perfectly bedded in a gorgeous birdseye maple stock. For glass it wore a 24 power Fecker scope. (Can anyone remember them?) After all the years it is impossible for me to remember group sizes but I do recall lots of 5 shot ragged holes at 100 yards. I also recall what must have been a zillion prairie dog kills too. We wore ruts in the highway between Sioux City and O'Neal, Nebraska where most of our doggin' took place.

At this time I was the very proud owner of a Model 70 Winchester rifle in 243 caliber. My gun was the standard model with a 24 inch barrel. On this rifle was mounted a 10 power Unertl "Vulture" scope. I did not keep a count of the prairie dogs that this rig accounted for but I do remember the dozens of boxes of Sierra 85 grain and Hornady 87 grain bullets that went through that gun. I suspect that Dr. Lutton, Glen Tennis and I saw the demise of at least 5000 prairie dogs over the two summers that I spent in the mid west.

Another little gun that I had built from scratch was a 22-06. This musket was built on a Mauser single shot action and it sport-

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ed a Douglas barrel 26 inches long. This gun wore many different scopes but I recall that it started out wearing a 10 power Weaver and wound up with a big 12 power Unertl "Ultra Varmint". This was some cartridge.

The velocity with 55 grain Sierras was something to behold. My old Hollywood chronograph clocked this bullet at 4125 fps. It was so fast that often times the bullet burned up before it went 100 yards. It was quite a sight seeing those bullets leave what looked like a vapor trail on the way to some lucky prairie dog that sat happily on his den 300 yards away. Incidentally my new Avtron chronograph purchased a few years later verified the accuracy of the old Hollywood machine. I had to purchase 55 grain full metal jacket bullets from Sisk since the soft point pills never made it all the way through the screens. But I am straying too far from the subject. Wildcatting is so, so much fun and this 22-06 brings back many good memories but I must confess that it was very, very hard on barrels. Well under 1000 (notice I said "well under") rounds of these hot loads caused significant throat erosion. I well remember that after four boxes of bullets accuracy fell right off too. I will never forget how sad and disappointed I was to learn the hard and expensive way that big cartridge cases full of powder behind small bullets played havoc on rifle barrels! There IS a point of very rapidly diminishing returns when it comes to cartridge case size and muzzle velocity. Sure, we can squeeze and I do mean squeeze a few (very few) more feet per second from a big case but to me the cost in throat erosion just is not worth it.

And more about throat erosion. The 250 Magnums that I mentioned earlier were very hard on barrels too. We were pushing 100 grain bullets right at the 3700 mark and both of these guns were real whistlers on prairie dogs. But their accuracy suffered badly after only a few hundred rounds. We had the right kind of powder back in those days too. I well remember purchasing 100 pounds of 4831 from B.E. Hodgdon for $65.00! After seeing these barrels shot out so quickly, Dr. Lutton went back to a 25-06 improved. This cartridge burned about 12 grains less powder but the barrel life improved by at least 500 percent. Out of barrels of the same length velocity was about 100 fps less than the 250 magnums. A very small price to pay for an increase in barrel life approaching 10 times! Indeed!

Since those happy years tinkering with wildcats with those two super good gun crank friends I have learned a lot and had a whale of a lot of fun. However the issue and reality of throat erosion has had a decided effect on me when I build up a long range varmint rifle. Now I do not want to cause severe pain to come to the wildcatting fraternity by saying this, but there isn't much out there that can really beat the plain vanilla 6mm's as produced by Remington and Winchester. And the old tried and true (and easier on barrels) 25-06 would be probably impossible to beat too. Oh sure, we are all greatly enamoured with the velocity claims of some wildcatters. But keep in mind that all too often these claims are the result of a zealous imagination on the part of the wildcat cartridge designer; a long, long barrel and chamber pressure that very likely could not be used consistently in the field. Give the factory 6mm's and the 25-06 equal barrel lengths and equal pressure and I don't think you'll see a dime's worth of difference between them and a big magnum burning 15 more grains of powder. One thing is sure however. The three cartridges just mentioned will be much more flexible to load for and their respective barrels will last a lot longer. The very small velocity loss will very likely never be noticed by the chuck or prairie dog no matter what the distance!

Lee Rogers
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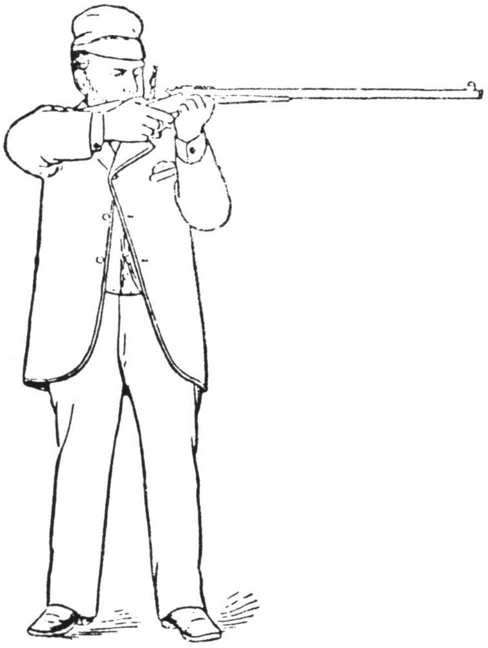

April 6th, St Onge, South Dakota. After twice postponing the trip due to a delay in getting stockblank and some sort of family get-together (I think it was Easter), my wife and I drove into the Miller's driveway about 1 pm on Saturday. It had been an interesting trip the day before from Southwestern Idaho to Casper, Wyoming. From Casper to St Onge is only a four drive.

Anyway, we got to Miller Arms for the grand tour of Dean's shop and classes in Schuetzen-style shooting and quality bulletcasting. Dean and his son Cyle, had put in most of the week trying to get the rifle finished. It had the final blueing and stockwork done on Friday. I spent a couple hours looking over the shop and asking Dean and Cyle questions for a separate article for the Pacific NorthWest Profiles Series that will be in an upcoming issue of PS. By time 4pm rolled around the wind had died down a notch below galeforce and we headed for Dean's 200yd range to see what the rifle and I were capable of. Dean told me he and Cyle had taken the rifle to the range for an hour earlier that week, but said nothing about the results.

Figuring that the new case design (the .32 Miller Short) was close to the old design (−.3″ oal) we started with the same 11gr of Accurate Arms #9 powder and a 205gr bullet load. It shoots! After five or six five-shot strings to get the scope adjusted and some idea of how the rifle likes to be held (lightly, but firm into the shoulder), I went to the first (gulp) record bull.

I shouldn't have worried. From the bench in Dean's shooting shack my spotting scope made it look close to a "possible". The 25 ring on the official 200yd bull is 1½″ across, and all 10 shots appeared to be in or cutting the line. After peeling me off the ceiling, we drove down to get the targets and see how I'd done.

Coors and the ASSRA both score on the centerline of the bullet hole shooting off the bench, and the "official" practice target **just** scores 244 with 4 centers. However, the target needs to be put into perspective. If a competitor had fired five 244-4C targets in the ScopeSight Bench Match segment at the Coors Schuetzen Nationals last August, it would have been the winning score. Looking back thru the Coors match report in the October '90 issue of PS you will see that Jim Feren won the benchrest scope matches with a 1217 - 26C score. Only three of the Top Twenty finishers fired aggregates over 1200. Don't get too excited yet, I'm not saying that I can win at Coors. I **am** saying that this rifle has the accuracy potential to do that. It definitely shoots. After dinner in town and a good night's sleep, Dean and I went back to the range on Sunday morning to do a last bit of load testing before my wife Lorene and I loaded up to make the 900 mile trek back home. A slow, drizzling rain had started the night before, and stayed with us all day.

Shooting in light rain does not bother me. I had a talk with Vern Johnson once at a Hunter Class Match, and he pointed out that it is a full length windgauge. Take a look in your scope some time and see what he meant. (Editor: Great quote!)

After setting up in the shack, Dean suggested a slight reduction in the powder charge. He had been concerned with silver flecks of lead fouling on the first Hoppes'-soaked cleaning patch the day before and the "lube star" on the crown. We cut the load to 10.5gr and went to the warmup bull to check it out. as the French say, Voila!! Sitting here, it is very satisfying to contemplate the target laying on the desk next to me. It scores 247-7, and with a little closer doping of the fishtail wind could have easily scored 250-10C.

We switched from Cherie Miller's 20X Untertl to the Redfield Palma rear, and Olympic front iron sights and went back to work. I am not a good shot with iron sights, my only real previous experience with irons and target work has been a couple seasons of DCM Hi-Power with an issue Garand.

Continued on page 30

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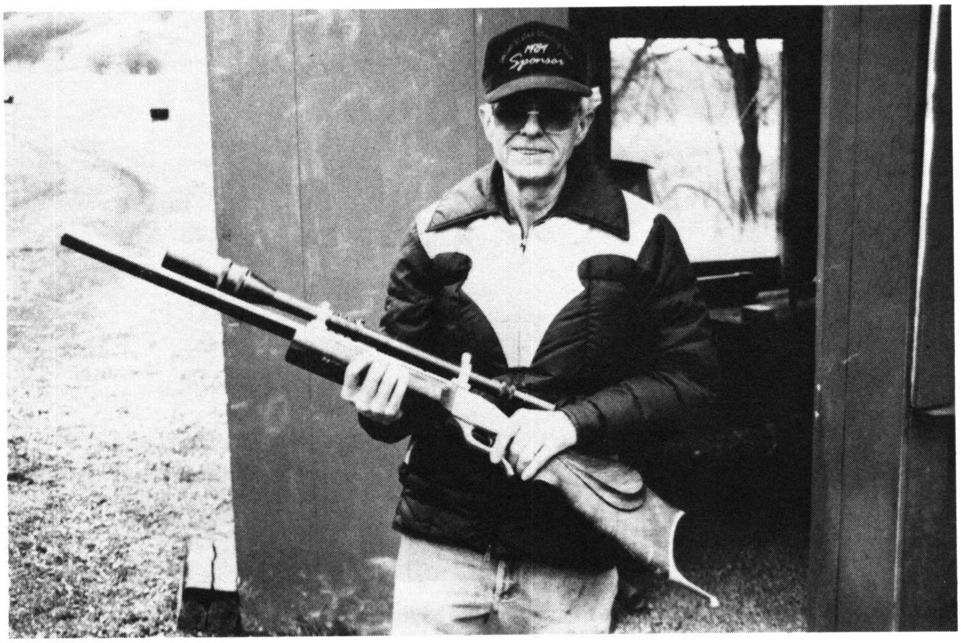
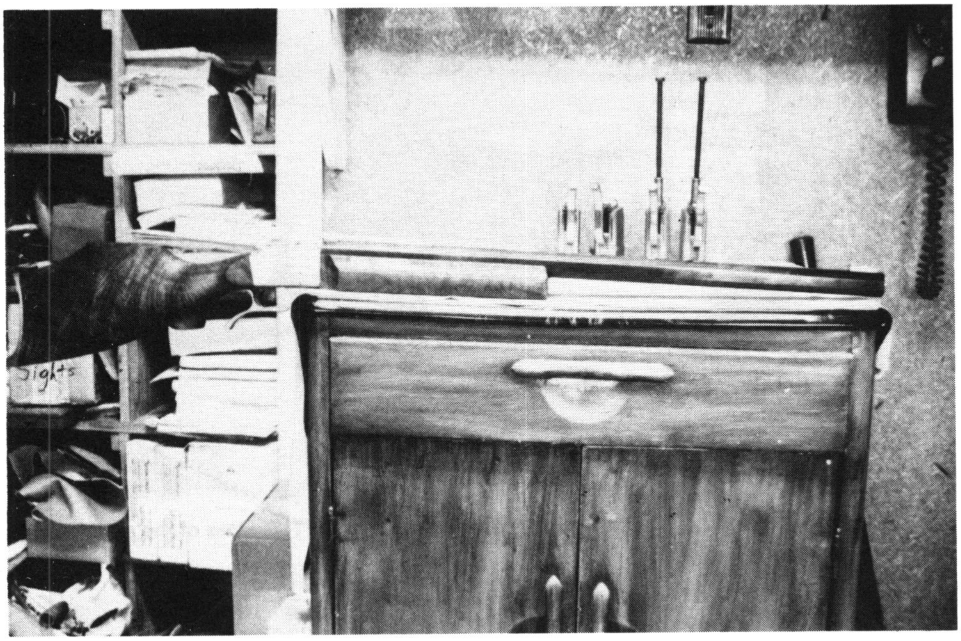


Dean Miller outside his two bench shack, holding my rifle. It is wearing Cherie Miller's Unertl for testing.



The rifle. Behind it are four actions destined for customers. I saw almost 100 machined receivers in the shop, waiting for the internal parts to be delivered and fitted. Good news for single shot competition this year.

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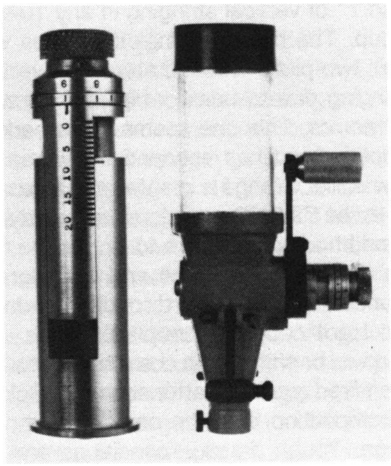

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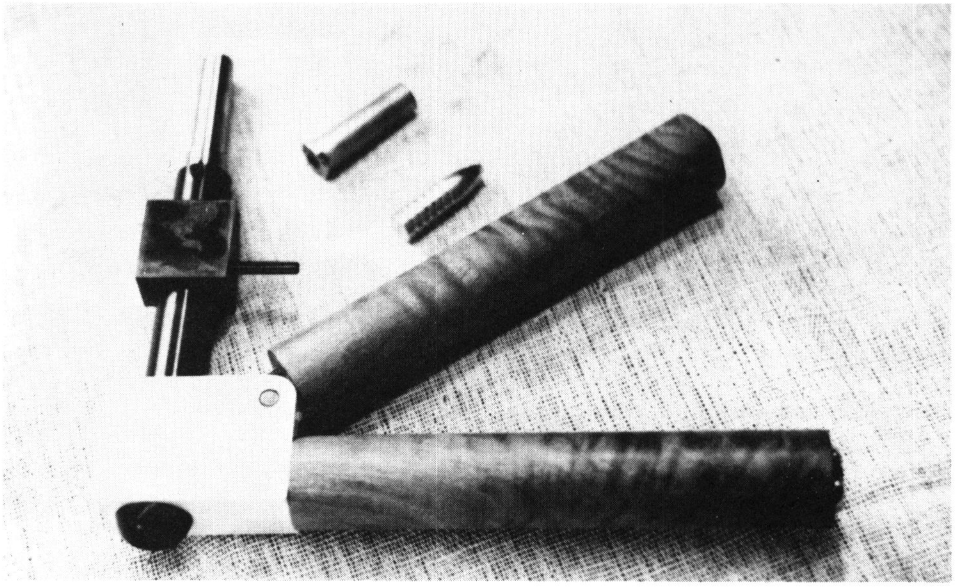
ON THE YELLOW BRICK ROAD

Continued

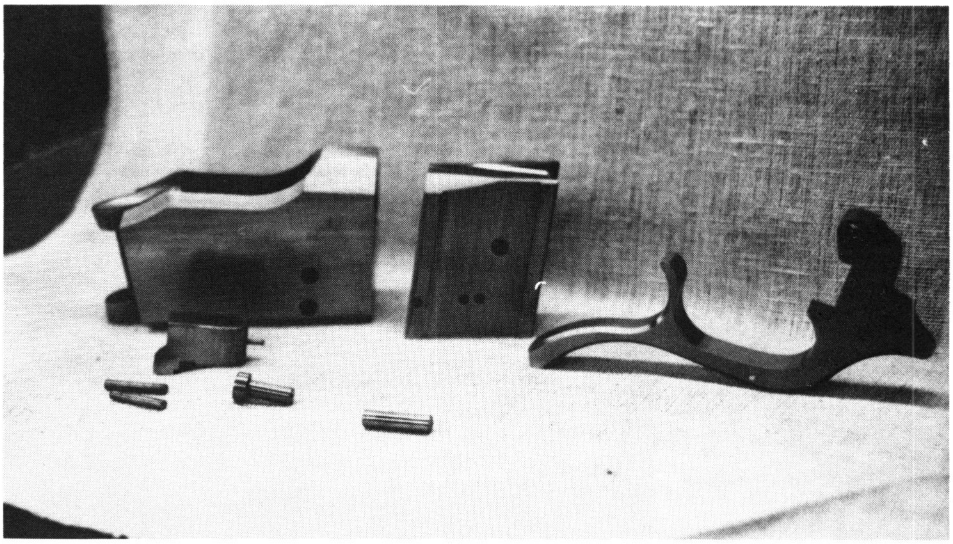
The rifle's accuracy potential again shone through, and I managed a decent 229. The scope is my best bet for placing at a match at this time, but the initial testing gives me hope for a decent showing at the Coors Nationals this August.

Dean is particularly pleased with the results of the testing. In the shooting he and Cyle did (and in mine) the rifle showed less than 1″ of vertical stringing in any 10-shot group. The curse of singleshot rifles with their two-piece wooden stocks, is vertical stringing due to barrel whip and vibration harmonics. This one seems to be bedded properly, and has escaped the curse for now. Miller's range is in a Vee and faces uphill to the East. The predominant wind condition I had was a North to South one that ran down into the draw and occasionally bounced up. It was a hard condition to dope, and I got caught a couple of times in a diedown or shift. Dean commented that he often fired equal or better scores at Golden in competition than the ones at his home range. Tough practice conditions are the best, if match preparation is important. They have not yet had a 250 fired at the Miller range, and only a few 248's and one 249.

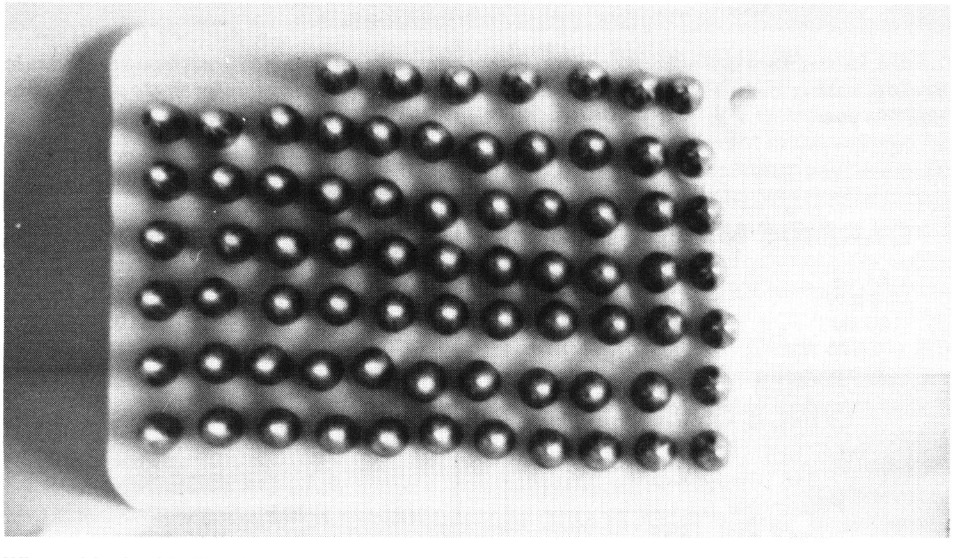
I spoke about the "lube star" and loadwork. One of the two basic ways to check your lube for effectiveness is looking at the muzzle. A working lube will leave a pronounced "star" of grease on the crown. Lube is forced out of the barrel grooves as the bullet departs, and leaves a stripe on the crown. The other (quick) means of checking the lube is examining the first patch soaked with solvent for flakes of lead. More than a few flakes of lead on the first Hoppes-



Neal Rice, of Arvada, CO, makes the triggers for the Miller action. He also crafts some of the most beautiful rifles at the Coors and ASSRA matches. This "nutcracker" breechseater is some of his handiwork. Shown with a bullet and .32 Miller Short case.



The Miller action: complete, less the Neal Rice trigger assembly. THE state of the art in today's singleshot rifles.



What a block of bullets look like in the solidified cake of lube. Punch 'em out and box 'em.

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Match Prep

Lifetime Tool

Your fearless correspondent with his lovely wife and the target shot with the rifle (scoped) testing at Miller's range. 247-7C.

soaked patch is a sign that the lube is not doing its job of insulating the bullet from direct contact with the barrel.

Once the bullet makes lube-free contact with the barrel bad things start to happen. It is similar to the ugly things that occur when an engine loses its oil and you get metal to metal contact. In this case however, the cure is much faster (and cheaper) than an engine overhaul. You go back to the powder measure and cut the load back. The other option is experimentation with the lube formula. Charlie Dell has made a 50 year career trying out different lubes in Schuetzen rifles, and has not quite found the perfect one. It is another area that singleshot rifle "tinkerers" are working in.

Dean and Cyle Miller have outdone themselves with this rifle. It has shot well from round one, and shows a wide latitude in load tolerance. If I can get my bulletcasting skills up to the consistency Dean has demonstrated, the Schuetzen competition year will be a verrrry interesting one. If not, it could be a verrrry long one.

Next month in part IV we get into loadwork, and some observations about match shooting. The Tacoma, WA Coors Northwestern Regional runs May 3-5, and the next report will cover the regional (and my performance).

COMPETITION DEBUT INAUSPICIOUS

May 3-5, Tacoma, Washington — Dave Purcell defended his regional title for the third straight year with a four match aggregate 1825-20C. Gerald Miller posted a strong 1813-7C to finish second and Chuck Bordman combined running the match and shooting to finish third with a 1759-7C. These three qualify for the National Final "A" squad. My lack of practice and offhand inexperience showed, as an aggregate of 1682-12C relegated me to 18th place. A crossfire cost me 12 points and 4 places. I am qualified for the Nationals. At least some good news.

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THE CONCENTRICITY GAGE

By Todd A. Kindler

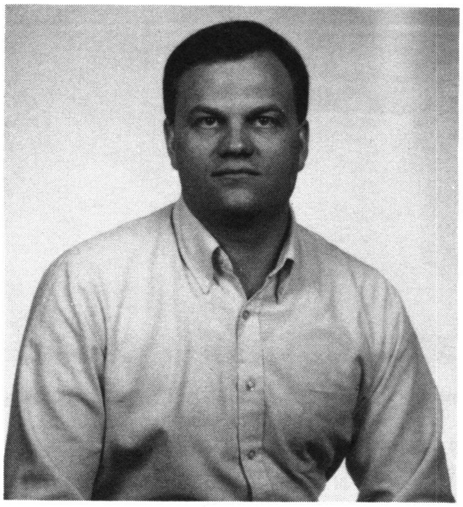
When I decided to write my first article, I made a promise to myself that I would not mention or write anything concerning bench rest. I really felt that there were many other more qualified people to help us in these particular areas, but after my recent test on fifteen match cases I just could not hold myself to that promise. I am just thankful I did not make this promise on New Year's Eve!

After returning home from practicing at the rifle range, I decided to load my Spitfire "6" cases. First off, before I get several letters and phone calls let me explain what a Spitfire "6" is. It is simply a 6 BR Remington shortened .085 with no other changes. It is made by running the reamer in that much short of the full length 6 BR when chambering. I named it after one of the most famous airplanes of World War II, the English Spitfire. This small fighter eventually turned Germany's famous Luftwaffe away during the Battle of Britain.

It is just a habit of mine to check every different cartridge I load for periodically on my concentricity gage. In the early years of trying to improve my rifle's performance I would orient the marked cases in the chamber the same way for improved accuracy. I even tried to straighten loaded rounds with a special tool, which never worked out very well.

The first concentricity gage I ever used was my friend's "Little Wiggler" made by Brown Precision which is now discontinued. This gage checked bullet run out, and we used it for our 224 CLARK's, 6 - 284 and .244 Ackley by marking the high points of run-out and orienting the cases in the chamber. This did improve our accuracy but did not cure the problem of cartridge misalignment.

My first concentricity gage that I purchased was the Bonanza CO-AX Indicator. This gage also worked well for checking loaded rounds for excessive run out. When I bought this gage I was starting to purchase other accuracy loading equipment such as a Sinclair neck turner and Bonanza Bench Rest Dies for my new 22 - 243 Middlested. The gage revealed my loaded rounds had a total indicator runout (TIR) of .003 to .0035 which is excessive. My cases were neck turned and both dies were set up according to the manufacturers instructions, but the seater die had a problem. There was too much play between the bullet seating stem and the die chamber. Believe it or not, I corrected it by wrapping a piece of clear cellophane tape completely around the bullet seating steam but not overlapping the tape. Then I carefully inserted it in the end of the die chamber with a little grease. This cut the TIR by one half with most rounds averaging .0015 or under and my five shot 100 yard groups improved dramatically. To look back, I guess it was more luck than anything else in finding the problem as I really did not understand how to correctly set up press mounted reloading dies and check them out closely for TIR.

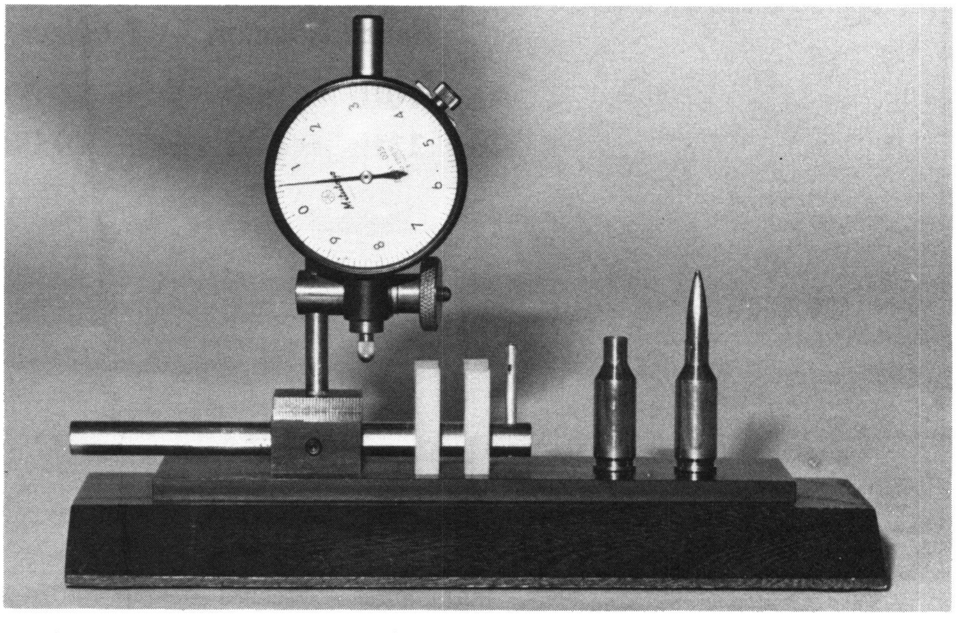


I feel the Bonanza Bench Rest Seater is the best commercially made press mounted seater made and have recommended the complete set to many handloaders. However, I do not take any type of reloading equipment for granted and that includes the custom tools from our best custom gunsmiths. Once I had a custom hand seater die made when the gunsmith chambered the barrel, but it did not seat the bullets straight. It was a beautiful die; highly polished and the resized cases fit in exactly flush at the base, the way there supposed to but my new Sinclair concentricity gage was telling me something was amiss. After looking the die over carefully to no avail, I turned my attention to the loaded cases and noticed the bullets had seating marks on the tips. The seating stem should make contact on the ojive of the bullet not the end tip of the bullet.

Once I took the seater stem out of the cap and looked in the end, it was very obvious what the problem was. The gunsmith had the right angle in the end but did not drill the center hole deep enough. A simple thing to fix by placing it in the lathe and drilling it a little deeper.

Both of these seating dies are quality reloading tools, but both had a minor problem that was easily corrected. Drilling a deeper hole or making a new slightly larger seating stem was just a small inconvenience and easily corrected. Not all reloading dies have a problem, but I feel it is worth while to check every reloading operation.

Back to those fifteen fired Spitfire "6" cases that just shot a couple decent groups at 100 yards. The first thing I did was wipe the cases off with a clean soft cloth and the entire Sinclair concentricity gage, especially the nylon V blocks that support the case. With the gage properly set up with one V block slightly behind the shoulder of the case and the other a little ahead of the ex-



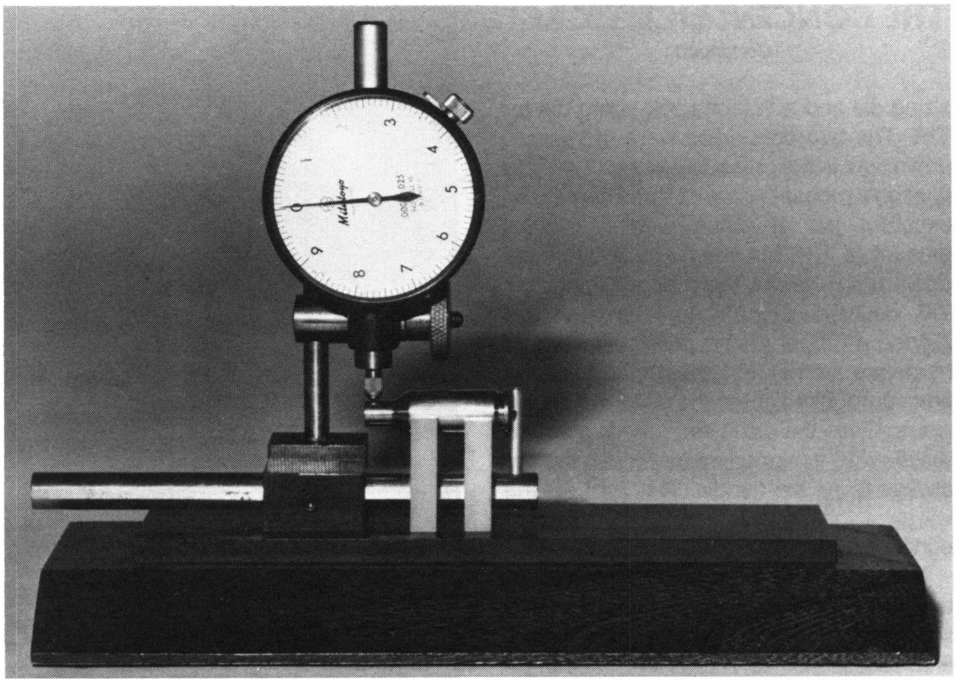
The Sinclair concentricity gage and two Spitfire "6" cases.

tractor groove of the case you can now set the dial indicator.

My first check was on the fired cases, which will reveal if a rifle or brass problem exists. Set the dial indicator so the round or ball end is on the front third of the neck and pre-set the dial about .005. It is important not to pre-set the dial indicator under heavy pressure because it becomes difficult to hold the case down evenly while turning. Then I turned each case slowly on the gage and recorded the TIR (Total Indicator Runout) on a sheet of paper for each of the fifteen cases. If you look at the enclosed chart under the fired column you can see my best cases had .0002 TIR and the worst were .0008, with the 14 fired case average (I forgot to check case #1 before full length sizing) .00043.

What does this average figure tell us? Let me try to explain. A couple years ago when first working with the 6 BR and then the Spitfire "6", I soon had a great deal TIR data but nothing to compare it to. So I turned to a friend of mine who is an excellent bench rest shooter that competes with several highly accurate 6 PPC bench rest rifles. These rifles have placed very well in National tournaments and have taken small group plaques in several matches. He was kind enough to let me check out a set of cases for his rail-gun, two sporters and heavy varmint rifles. This information has been invaluable as a set of standards to compare all my TIR readings with.

So the .00043 average TIR of the fired cases **in my opinion** is an excellent average. Although the average gives us a quick idea of what is going on, the excessively high runout cases should be our main concern. Cases #10, 11 and 14 were on the high side .0007 - .0008 and cases #2, 3 and 13 were on the low side .0002. It might be interesting to mark the TIR on the cases with a permanent marker and compare them after every firing. For instance, would case #10 with .0008 runout always be on the high side or would case #2 continue to be low after every firing. If the cases remained the same, they could easily be sorted out with any case over .0005 TIR being culled. This low average tells me my Teddy action is true, the gunsmith did his part when he installed the barrel, the cases are of good quality and were formed down properly before firing.



The Sinclair concentricity gage checking TIR on a sized Spitfire "6" case.

After the fired cases were checked on the gage, I ran them through my 6 BR Redding full length sizing die. This die was shortened .085 on the surface grinder at work. Then polished inside with 600 grit abrasive paper and polishing compound while spinning fast in the lathe. The shoulder and neck areas of the die were not polished or changed in anyway. This allows the brass cases to slide in and out of the die with a very small amount of lube. The best resizing lube that I have ever used is Imperial Sizing Die Wax made by LE Clear Industries, Royal Oak, Michigan, which I purchased from Kelbly, Inc. A small amount on the finger tips will lube a half dozen cases and is easily wiped off once the cases are sized.

Several years ago, I compared a Bonanza full length sizing die, Redding full length

Continued on next page

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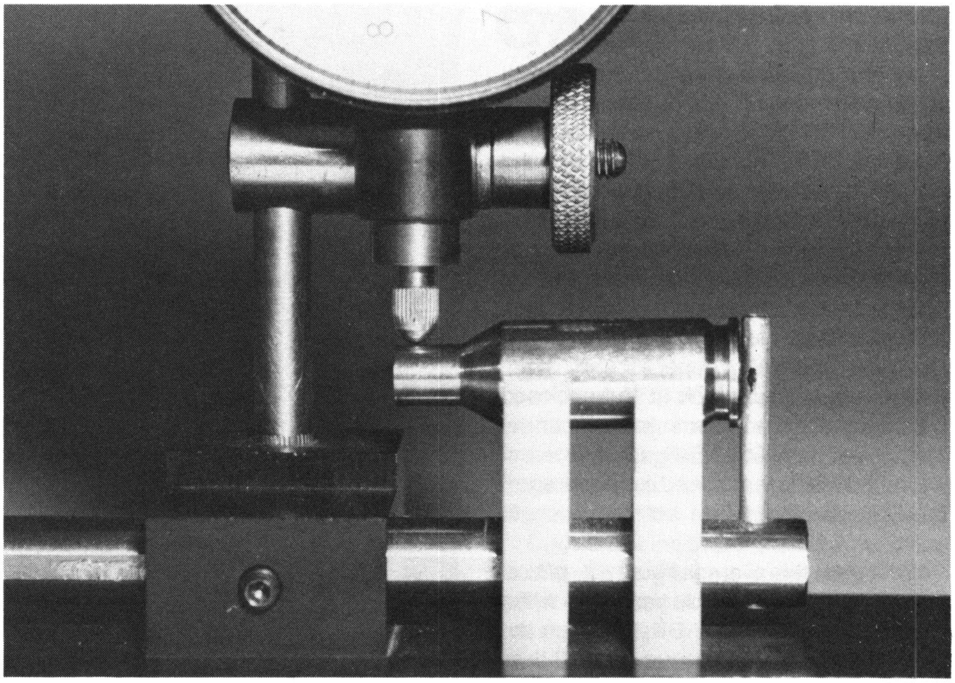
sizing die and a Wilson neck sizing die for TIR. The two press dies were not locked down tight in the press, but were allowed to float on a rubber O-ring. All three dies did an excellent job of sizing with a minimal amount of TIR, but when I locked one die down tight without the rubber O-ring, the TIR doubled. Since then I have always slipped a rubber O-ring (available at most hardware stores) underneath the lock ring and very lightly tighten the die down on the press. Once the die is set, I mark a dot on the die with a permanent marker so the dot always faces the handle. This light setting will allow the die to float but not work loose during sizing.

This was about the eighth loading of these Spitfire "6" cases, and I was bumping shoulders about .001. When I chambered a fired case in the rifle, I could feel just a slight resistance on closing the bolt. Later when the brass work hardens from many repeated firings, the die may have to be turned down slightly more to bump the shoulders .002 -.003 for uniform bolt closing.

The full length sized brass also turned out very well with an average TIR of .00052 for all fifteen cases. These cases were also checked at the same point on the neck as the fired cases. This time only one case reached .0008 and oddly enough case #5, #8, #10 and #11 turned out under the fired TIR reading. The Redding full length sizing die actually straightened these cases, but more than that, the total average was **excellent,** or should I say on par when compared to my friend's best set of PPC cases.

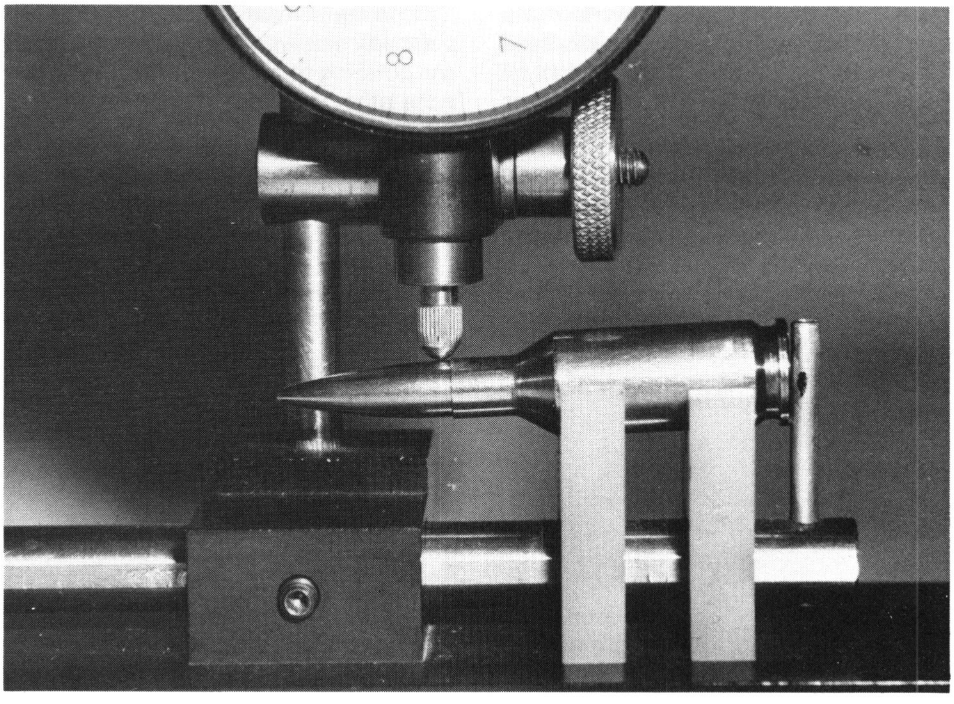
After full length sizing, the cases were lightly inside deburred and the necks cleaned inside and out. Once primed and loaded, the bullets were seated in my Wilson hand seater. The seater had my custom 6 BR reamer run in and the bottom shortened for my Spitfire "6" case.



Checking TIR on the fired or sized case. Notice the end of the dial indicator is on the front third of the case neck.

Then I set the concentricity gage to check the run out of the loaded cases. I like to set the end or ball of the dial indicator on the bullet very close to the end of the neck, but not touching the neck. The TIR average for the fifteen seated cases was .0007, which is also **excellent.** Only two cases (#3 and #14) exceeded .001 TIR and three cases (#5,11,12) somehow turned out slightly lower than when full length sized.

If you are only going to check one step, make it this one if you are confident in your rifle and your sizing die has been checked previously. Loaded cases that have TIR of .000 - .001 are excellent and .0011 - .0015 are fair (sighters) or possibly questionable. Any case with TIR over .0015 should be considered excessive, and it is time to run a thorough test like I just did on my Spitfire "6". These low TIR limits are for precision rifles such as bench, long range, precision varmint rifles or any rifle where extreme rifle accuracy is the primary goal. The Nosler



Checking TIR on the loaded round. Notice how close the end of the dial indicator is to the end of the case but not touching.

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Reloading Manual #1 states concerning concentricity "Most shooters agree that more than .0015 TIR is considered excessive."

When I ran my first concentricity tests on my Spitfire "6", I mentioned my results to one of our excellent bench rest gunsmiths who at the time was also shooting a short 6 BR. He boldly replied that the proof is on the target and his concentricity gage has been on the shelf collecting dust for years, he had quit using them long ago. Well, I can not argue with small groups, but I remember meeting a fine shooter at Kelbly's rifle range back in the early 80's who had then recently shot a .110 - 200 yard Sporter N.B.R.S.A. record. When the late Tom Minder showed me the group, he was sitting at the table checking every loaded round on his concentricity gage. With this in mind, maybe precision shooters should dust off their concentricity gages once again!

TOTAL INDICATOR RUNOUT (TIR) SEATED

.0000 - .001 excellent
.0011 - .0015 fair
over .0015 excessive

FACTS FROM MY TESTS

The TIR averages increased with every reloading step (see chart)

Floating full length sizing dies (on rubber O-rings) have lower TIR than locked down dies

A relatively deep inside chamfer of the case mouth with the deburring tool will seat a bullet straighter

TIPS FOR LOW TOTAL INDICATOR RUNOUT (TIR)

Keep concentricity gage clean especially the V blocks or the steel ball bearings (The new Sinclair gage has steel ball bearings and does an excellent job.)

Wipe off cases after every reloading step and before setting them on the gage.

Clean seating die periodically with a chamber swab and use a small cotton swab to clean the inside of the seating stem.

After trimming, use a deburring tool for relatively deep chamfer and lightly deburr on every reloading

EQUIPMENT USED ON THIS TEST

1. RCBS Partner Press
2. Redding Full Length Sizing Die (with rubber O-ring and decapping stem but no expander)
3. Sinclair (old model) concentricity gage and Mitutoyo dial indicator .0001
4. Wilson "Custom" Seating Die

CONCENTRICITY GAGE TEST 3/3/91

SPITFIRE "6" (6 BR - .085 SHORT)
Sinclair Concentricity Gage

Total Indicator Runout (TIR)

CASE #	FIRED	FULL LENGTH SIZED	SEATED
1.	not checked	.0005	.0007
2.	.0002	.0002	.0005
3.	.0002	.0005	.0011
4.	.0003	.0006	.0010
5.	.0004	.0003*	.0002**
6.	.0004	.0007	.0007
7.	.0005	.0007	.0008
8.	.0004	.0003*	.0008
9.	.0004	.0006	.0007
10.	.0008	.0005*	.0006
11.	.0008	.0007*	.0005**
12.	.0004	.0007	.0006**
13.	.0002	.0004	.0007
14.	.0007	.0008	.0012
15.	.0004	.0004	.0004
Averages	.00043	.00052	.0007

*Reading was lower than original fired

**Reading was lower than full length sized

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THE 6.5x06 ACKLEY IMPROVED

by

Bob Jourdan

The 6.5mm has always been the ugly step-child of the American firearms companies. With our gun industry over 200 years old it is hard to imagine that we have only designed three 6.5mm cartridges that have been placed in commercial production. At the same time, the 6.5mm in its various forms has been a roaring success in the rest of the world. It has been a magnificent winner in the target field and carries an unflawed reputation on all sorts of worldwide big game. It has been a military cartridge, an elephant cartridge, an Olympic cartridge, a subsistence cartridge and just a general, all-around fun cartridge. Everywhere except in the U.S.

The history of the commercial 6.5mm cartridge in the U.S. can be covered rather quickly. The first was the .256 Newton in 1913, out of business by 1929. The next was the .264 Winchester Magnum in 1959, now barely hanging on as first one company and then another drops it from their lines. The last one was the 6.5mm Remington Magnum, born in 1966 and dead by 1983.

Even the handloading manuals have not treated the 6.5mm like royalty. Of the most popular and useful cartridges, those of .22 through .30 caliber, only the .270 caliber is shown less frequently than the 6.5mm.

The question then must be, is there a 6.5mm following at all? The answer is a very strong yes from the wildcatters of America. Proof? The dozens of wildcat designs with published information. My brief search turned up 44 different 6.5s, and the reamer and loading die companies tell me there have been many, many more that were designed and tools were made but nothing more was ever heard of them. Additional evidence? The many different bullet weights offered by the bullet companies. Only the 7mm outnumbers the 6.5mm. Even the pure American .30 caliber is not offered in more weights than the 6.5mm, according to the counts I made from all the bullet companies I could come up with.

MATCH GRADE 6MM BULLETS

by

Brian Rubright

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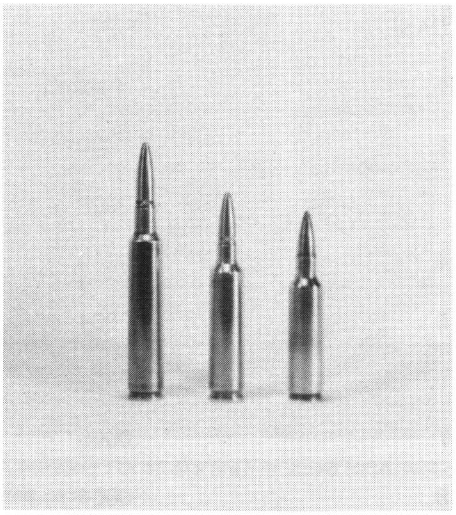


Three of Ackley's finest, (L-R): 6.5x06 Ackley Improved; .243 Ackley Improved; .250 Ackley Improved. The .250 holds 50% less powder than the big 6.5mm, but velocities are not far apart!

The only American 6.5mm with any spark of life left is the .264 Winchester Magnum. I had read many glowing reports on it after I had given up on a .257 Weatherby Magnum and sold it due to belted case troubles and lack of consistent accuracy. The sexy looking .264 looked like the cure-all for really high velocity, which I have always been a believer in. I just had to have one, and before long it came to be. I went through all the problems of trying to get the top velocities as reported by the factories, but soon found I couldn't win. The caliber was great; the cartridge was a dud. I started a search for a 6.5mm on a standard case that might give velocities close to those advertised for the .264 Magnum.

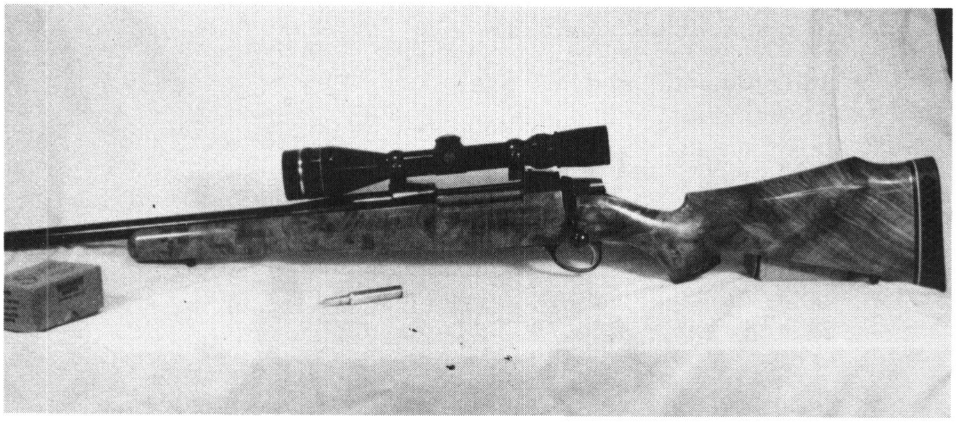
That search finally brought me to the wildcat 6.5x06 Ackley Improved. It is a powerhouse giving performance approximating that of the .264 Magnum without the problems associated with the belted case. Ackley's books do not give its date of birth, but it was probably during the 1940s when Ackley was deep into wildcat development. The commercial cartridge companies were completely out of the 6.5mm game, having discontinued the .256 Newton loading back in 1938. There was room for a good 6.5mm, and Ackley was ready and willing.

The 6.5x06 Ackley Improved, also known as the 6.5x06 Improved and 6.5x06 Ackley, was designed to push velocities up from those of the old .256 Newton and give the experimenters and wildcatters an easy to form, hot cartridge that would be useful on anything from varmints to big game. By basing it on the .30-06 case, a case supply would be available forever. It looked like just what I should have.

After procuring the necessary parts, I set up the lathe to turn a barrel like a comely blonde, nice and slender. The chambering, threading and fitting went like clockwork, and I was soon knee deep in beautiful, AAA Fancy Myrtle wood chips. Weeks later everything came together under a Leupold 3-1/2 x 10 scope, ready for forming cases and working up loads.

The good-books all indicate that the .30-06 case can easily be necked to 6.5mm (.264). My trials proved otherwise as I lost several cases as they collapsed from necking too far in one pass. It was obvious that I could neck them in two steps, but even then I would have thick necks requiring reaming. Why not simply start with the .270 Winchester case? Or neck up the .25-06? My cartridge might not really be the 6.5x06 Improved . . . maybe a 6.5x.270 Improved . . . or a 6.5x.25-06 Improved . . . Gee! Forget all the technicalities. All these cases are the same, each derived from the '06 case, so call it the 6.5x06 Ackley Improved regardless of the final headstamp. I decided to use the .270 Winchester case.

In forming wildcat cases a false shoulder should always be formed on the new case neck to cause the case to be jammed tight into the chamber to assure proper headspace for fireforming. With the .30-06 case it would be easy to leave a .30 caliber shoulder of perhaps .050″ long at the shoulder-neck junction, assuring a tight fit for that first critical shot. The .270 offers the same opportunity for a false shoulder, but the .25-06 does not. It would have to be expanded to create the false shoulder. Thus, the .270 looked best and is close enough to .264 to not cause neck thickening.



My 6.5x06 Ackley Improved in its pretty AAA Fancey Myrtle wood stock, with a 3-1/2 x 10 Leupold scope. A deadly deer rifle!

The .270 case starts out new at 2.54″ overall length. This is about .050″ longer than the .30-06 and requires trimming before loading. By careful measurement I found my chamber could use a case of 2.508″ OAL and not jam the mouth. Since cases normally shorten when fireformed, the .270 case trimmed to 2.508″ would be much better than starting with the shorter .30-06 case. And that is exactly how it worked out. After fireforming, the cases measured between 2.488″ and 2.498″. Due to the 40° shoulder any future case trimming will be about eliminated . The overall case length of the 6.5x06 Ackley should not exceed 2.50″. The fireforming load should always be a rather stiff load, regardless of what the various writers say about using light charges. The stiff load will assure full forming of the case at the shoulder corners. If a light load is used the case can be left ill-formed, short and with excess headspace for the next shot. Sure could prove to be exciting . . .

My 9 steps for fireforming the 6.5x06 Ackley are set out at the end of this article, as is a loading chart worked up with my rifle. Do not use the top listed loads without starting your tests at least 10% low and work up one grain at a time. If high pressure shows up, back off two grains. And I might add that when I fireform with a new rifle I set it up firmly on the bench and sandbag it down with one bag behind the bolt and one over the loading port before firing the first few shots. Over these bags I place a piece of old, heavy carpet, leaving an opening where I can reach in to pull the trigger while my back is turned. No guts . . .

Accuracy with this relatively light weight hunting rifle has varied all over the map. My first target efforts were with the Nosler solid base bullets. In other rifles they had shot rather well, but in this 6.5x06 Ackley, no dice. The groups were consistently between 1.5″ and 2.5″, which I find unacceptable. Next I tried a few Hornadys with considerably better results. But it was the Sierras that first dropped the groups below one MOA. They often ran .5″ to .8″, but only with certain powders. Speer bullets averaged between .75″ and 1″, again with certain powders. I still have more testing to do to find the best loads for best accuracy.

With the 6.5x06 Ackley I had hoped to avoid the load development problems that are common to cartridges with large capacities and small bores. It was not to be, even though this case is much smaller than that of the .264 Magnum. Most of us who do much experimenting do learn about these problems, but we can't resist the temptation of trying one more time. The thought lurking in the back of our minds is always the same: If 50 grains of powder will give some bullet 3500 fps, then 60 or even 70 gr. should send the same bullet off at 4000 fps or more. But of course, the law of diminishing returns has to haunt us at some point with every caliber.

Examples of diminishing returns in cartridge loading are abundant. The .22 caliber does well up to about a 40 gr. case capacity. Thereafter, any gain in velocity is made with great expenditures of powder and at great barrel loss. The same occurs with the 6mm beyond 50 grs., the .25 caliber after about 55 grs. and the 6.5mm at about the same. When we exceed these levels we find a much higher percentage of powder must be added for a very small percentage in velocity gain. In very large cases it is possible to reach a no return situation. An excellent case in point is my little .250 Ackley Improved with a maximum case capacity of 51.9 grs. water to overflow, which gives it a powder capacity of somewhat less than 48 grs. It will send out a 60 gr. bullet at 3992 fps, instrumental, which converts to 4007 fps muzzle velocity with 42 grs. of powder. Compare this to the large .257 Critser Magnum with 87.6 grs. water capacity to overflow, giving around 85 grs. powder capacity. It sends the same 60 gr. bullet off at only 300 fps faster than the little .250, but requires 33 grs. more powder! Do you think that would burn out a barrel . . . 400 shots . . . 200 shots . . . or while trying to sight-in?

The 6.5x06 Ackley has a water capacity of 72 grs., full to overflow. Thus, the powder capacity is about 68 grs. which means that it is well beyond the efficient case size of 55 grs. for a 6.5mm bore. It also points out why the common 6.5x55 Swedish cartridge with a powder capacity of only about 50 grs. has such a great reputation for both accuracy and ease of load development. The 6.5x06 Ackley will give excellent velocities, but load development and accuracy will require a lot of experimentation. And if the experiments require a lot of shooting the barrel could suffer burnout before a series of best loads are found. This, too, is part of the reason for the fade-out of the .264 Winchester Magnum.

The most accurate loads so far in my 6.5x06 Ackley are created with slow burning powders. H450, IMR4350 and AA4350

Continued on next page

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THE 6.5x06 ACKLEY IMPROVED

Continued

The first deer for my 6.5x06 Ackley, taken in the desert of northwestern Colorado.

seem to be best regardless of bullet weight. H4831 shows potential, too. Bullets seem to be a problem in that they have not been consistent. No one yet produces benchrest quality jackets for the 6.5mm and therefore we have no real accuracy bullets available. Thus, we are left with the commercial custom bullets from Sierra, Speer, Hornady, Nosler, etc. The Sierra 120 gr. Match bullet may be the best of the lot, but in any .264 diameter it seems there should be match quality bullets in the useful varmint weights of 80-100 gr. Occasionally I get groups of .6″ with the Sierra 85 gr., but not consistently. Even with a series of identical loads the groups are erratic. The problem appears to be the bullets. I have run several bullet tests with the 6.5mm and have hard evidence proving the various factory cartridge 6.5mm bullets are extremely poor when it comes to real accuracy, averaging about 2.5″ at 100 yards. My loads using Sierra bullets will always cut the groups in half.

My load chart shows that the 85 gr. bullet has only been tested up to 3624 fps in my 24.5″ barrel. My calculations indicate that a velocity in excess of 3800 fps should be obtainable without problems. The absolute top calculated velocity is 3978 fps, but I do not anticipate reaching that speed with useable chamber pressures in a 24″ barrel. A 30″ barrel should easily give this velocity and would probably send it past 4000 fps. Any tests above 3700 fps should be done in half grain increments and all cases should be inspected under magnification.

The 6.5mm bore is an in between caliber — getting large for varminting, but small for the heaviest game. Maybe it fits well into what is called an all-around caliber. In any case, I pictured the 6.5x06 Ackley as possibly the best choice for open mountain hunting where snow capped peaks can be seen for 100 miles, golden eagles soar overhead, aspens mix with blue spruce and fir trees on mountain slopes and the scent of purple sage drifts quietly up into the canyons from the expansive flats below . . . Reminds me of a story . . .

My wife, Maryline, and I had just sent our friends, T.G. and Treabie Birdwell, around the west end of a bench that cropped up out of the northwestern Colorado desert and worked its way up toward Diamond Peak. The breaks off the bench were filled with mountain mahogany, cedar, juniper and, we hoped, mule deer. Our friends were to cut across down wind, hit the heads of the breaks and carefully hunt back our way. Maryline and I would, in effect, be the doggers by entering the draws and breaks where the air currents would carry our scent to the deer, driving them toward T.G. and Treabie.

We quickly made our way a half mile across the flat top of the bench to the rim. We quietly spread out 20 yards apart to tiptoe to the edge in hope of spotting a buckskin unaware. Nothing was moving. We strained our eyes and hardly breathed for what seemed like an eternity. But at last it appeared obvious that our hopes had been dashed once more. I motioned Maryline ahead to drop down off the rim.

Suddenly in an explosion of rocks and breaking cedars 20 yards in front of me three muleys crashed down the slope, stirring up enough dust to do a bucking bronco proud. One broke out on a finger ridge and stopped to see why the others were so shook up. A quick yell to Maryline and her .243 was up and aligned. But no shot came. She lowered her rifle and bounded my way, pointing down somewhere beyond the cedars that blocked my view. "That's the little one! The best one is down below," she breathlessly shouted out to me.

Within a heartbeat the best looking buck charged headlong up the opposite slope from the cedars he had so skillfully kept between us. Maryline's .243 cracked and the buck flinched but kept going. Another leap or two and he would be over the top. I dropped to a sit, brought up the 6.5x06 Ackley, threw the crosshair out in front of the scurrying buck and sent a 120 gr. Sierra after him. He was in mid-air and then instantly tumbling in a cloud of chalky white dust, out of sight over the ridge. The bullet had hit home just back of the shoulder as he

Continued on page 40

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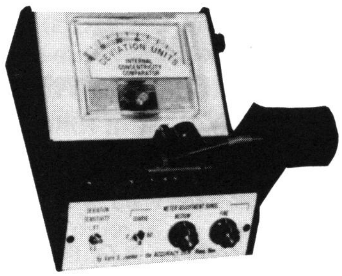

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6.5mm x 06 ACKLEY IMPROVED 40°

Sako Custom, Douglas 24.5" Barrel
By: Bob Jourdan

BULLET WEIGHT	STARTING LOAD				TESTED LOADS				NOTES
	POWDER	CHG	VELOCITY	CASE	CHG	VELOCITY	CASE	TEMP	
85 gr.	AA2520	48	3169	R	52	3624	R	50°	Mag. primer.
	IMR4064	53	3396	R	55	3527	W	47°	Mag. primer.
	H414	57	3501	W	58	3617	R	94°	
	H380	57			58	3553	W	94°	
	AA4350	57	3263	R	60	3522	R	63°	Mag. primer.
	H450	62			65	3571	W	88°	Full case.
	H4831	63			65	3566	W	90°	Full case. Accurate.
100 gr.	AA2520	50	3363	W				45°	Mag. primer.
	IMR4064	52	3281	R	54	3478	R	47°	Mag. primer.
	H414	56	3390	W	57	3541	W	94°	
	H380	57	3421	W	58	3497	R	95°	59 gr. blew primer.
	IMR4350	55	3171	W	57	3346	R	70°	
	AA4350	55	3094	R	58	3398	R	62°	
	H450	61	3353	W	64	3549	R	65°	Full case.
	AA3100	61	3243	W				47°	Mag. primer.
	H4831	63	3409	W	65	3523	W	90°	Full case.
	IMR7828	63			65	3414	W	70°	Full case.
120 gr.	AA2520	47	3073	W				50°	Mag. primer.
	IMR4064	50	3098	R	52	3242	R	47°	Mag. primer.
	H414	53	3131	W	55	3292	W	94°	
	H380	53	3177	R	55	3243	W	94°	56 gr. blew primer.
	IMR4350	54	3053	W	56	3206	W	70°	Accurate.
	AA4350	54	3052	R	57	3282	R	62°	Flat primers.
	H450	57	3022	W	61	3336	R	65°	Accurate.
	AA3100	57	3011	R				47°	Mag. primer.
	H4831	58			61	3286	W	90°	62 gr. blew primer.
	IMR7828	60	3225	R	63	3315	W	75°	
	H870	64	3006	W	67	3135	W	75°	Full case.
125 gr.	H380	53	3182	R	55	3222	R	100°	Smoked primers.
	H450	57			60	3282	W	93°	Accurate.
	H4831	57			60	3278	W	92°	Smoked primers.
	IMR7828	60	3260	R	63	3355	W	92°	Compressed.
140 gr.	IMR4350	53	2950	W				70°	Mild.
	AA4350	52	2843	R	54	2986	R	62°	Flat primers.
	H450	57	2952	W	58	3086	W	82°	Accurate.
	AA3100	56	2929	R				47°	Mag. primer.
	H4831	57	2962	W	58	3039	W	90°	
	IMR7828	58	2996	W	60	3100	W	75°	Mag. primer.
	H870	64	2967	W	66	3072	W	85°	Compressed.

THE 6.5x06 ACKLEY IMPROVED

Continued

vanished over the top. We hurried toward the ridge as the smaller buck and one doe broke out far below on the sage flat. Our buck was a fine, young 3x3. Inspection showed that Maryline's .243 bullet had burned across both hind legs. The 120 gr. 6.5 bullet at 3250 fps had done the job. The 6.5x06 Ackley proved itself to be all we had hoped for — a superb mountain cartridge.

Our friends haven't forgiven us. Something about us knowing the deer would be where we went . . . Sending friends off in the wrong direction . . . All in order to test the 6.5x06 Ackley!

Maryline and I hunt together every year. I shoot 'em; she carries 'em out!

CASE FORMING FOR THE 6.5x06 ACKLEY IMPROVED 40°

1. Start with .270 Win. caliber brass. Remington brass has thicker walls, which may be preferable due to slightly more blow-out protection. However, any brand will form well. We use .270 rather than .30-06 because when necking down to .264 (6.5mm) the severe reduction of the .30 cal. will result in a few lost cases due to neck collapse, and the shorter .30-06 case will not be long enough to properly fill the chamber. If you care to use .30-06 brass it will work fairly well, but will end up considerably short.
2. Correctly adjust your 6.5x06 Ackley dies for your particular loading press. Now shim under the decapping die lock ring with .05″ shim, or back it out an equal amount and be sure it does not continue moving as you use it. By having the die backed out .05″ we will be sizing the neck only and will leave a false shoulder .05″ from the juncture of the neck and shoulder of the .270 case. This false shoulder is vital to the assurance of tight headspace when the loaded case is chambered in the rifle.
3. Next, trim all cases to 2.508″ length, or the full measured length of your particular chamber. Try all cases in the chamber to assure snug fit, and to assure that case mouth is not jamming the end of the chamber.
4. Deburr interior flash hole. Uniform all primer pockets. If you do not have the tools, skip this step. It is an accuracy improvement step.
5. Prime and charge with powder. Do not use a reduced load! Use normal, medium to high .270 loads. This must be observed in order to assure blowing out a proper shoulder and creating the proper headspace for the next loading. Light loads may not properly form the shoulder, thus creating too much headspace, and could result in a dangerous condition. We use 55 grs. of H414 powder and a 100 gr. bullet.
6. When fireforming always be cautious. With any doubt at all, or if using a new forming load, do not settle over the rifle in a normal way. It is best to cover the rifle with sand bags, thick carpet, heavy jacket, etc., and reach under to operate the trigger with your back turned! While fireforming is routine and can be perfectly safe, do use judgement. Once you have assured yourself that your loads and methods are safe, you may feel comfortable with regular shooting positions.
7. Inspect each case as it is formed. Look for good shoulders.
8. Fireformed cases will shorten by about .015″ or so, varying with the quality of the brass. Generally they will measure 2.490″ to 2.498″ after forming.
9. Cases shorter than 2.495″ should only be trimmed on the high side. Trim all others to about 2.498″. Proper full length for the 6.5x06 Ackley is 2.50″. The 40° shoulder will prevent stretching, so cases may never reach this length. If they do, keep all trimmed to 2.50″.

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MORE 7mm STUFF

Dear Dave,

Your correspondent John H. Feamster poses a problem to which I may have a solution. I am an inveterate wildcatter with a proclivity for experimentation (Editor: those are fighting words in most waterfront barrooms) and offer the following for his consideration.

I have chambered four rifle barrels for a cartridge that I call the 7x47½. The cartridge is a basic 7-08 Rem. reduced in length by .165 inch and formed from .300 Sav. cases by shortening a full length 7-08 resizing die by the same .165 inch. No trimming is necessarily required and the reforming operation is one stroke of the press which in my case is accomplished by the use of an R.C.B.S. Jr. press so you may judge the task to be a simple one. The overall length of the reformed case will be extended from the Savage case dimension by about .025 inch to about 1.875 inch. The minimum length of the 7x47½ chamber when cut with a 7-08 reamer would be 1.880. One may trim to 1.870 (47½mm) to obtain optimum length if dimensional integrity is of paramount importance. New cases should be used for reforming to the 7x47½ cartridge because when a 7-08 match reamer is used for the chambering the head end of the 7x47½ chamber will be slightly smaller in diameter (.0026) due to the body taper of the reamer. 7-08 or .300 Sav. cases fired previously in SAAMI chambers may be too large in diameter at the head to reform into the new case although I guess it could be tried if one has a large supply of fired brass.

A standard 7-08 rifle can be converted to a 7x47½ by machining the barrel shoulder back .165 inch and the breech end of the barrel by a like amount.

The total capacity of the 7x47½ is 49.5 gr. of water (11.5% less than the 7-08) and to the bottom of the neck 45.2 gr. The only non standard item needed to accomplish the foregoing would be a headspace gauge. The body diameter of the gauge should be about .004 inch less than a 7-08 gauge to facilitate the precise shortening of a 7-08 die to a 7x47½ die. I have an optical comparator so was able to make my own gauge thereby obviating the necessity to purchase any wildcat tooling.

Between the four rifle owners we have probably reformed over one thousand cases without problem and none of the necks have NEEDED turning or reaming. The chamber neck diameters are .315 inch and the largest neck diameter of a loaded round has been .3125 inch. If cartridges are loaded with bullets heavier than 140 gr. with their bases at the top of the shoulder, the throat of the chamber may need to be deepened separately with a throating reamer to the desired depth following the chambering with a 7-08 reamer.

I had a preconceived idea of what I wanted in the way of velocity and an educated guess as to what could be expected, and not wishing to wear out the barrel on the bench, did not do extensive testing over the chronograph. However the following may be of interest to those wanting a 7mm cartridge for rifle silhouette shooting with ballistics similar to the IHMSA cartridge, but not at the expense of expensive tooling and dies.

Though not built to bench rest specs two of the rifles with Schneider barrels, and one with a Hart barrel, shooting Sierra Match King bullets were exceedingly accurate, on occasion producing groups comfortably under one inch at two hundred yards. All groups were five shots using Winchester cases and CCI 200 primers from a twenty five inch barrel.

Slower powders were tried, producing excellent accuracy, but at reduced velocities that were considered unacceptable for the purpose intended, namely reduced recoil with no reduction in accuracy and enough speed to get through fishtailing winds at Raton, New Mexico without too much drift.

In conclusion my suggestion to all you Silhouette shooters is to go out there and "knock 'em down".

Regards
Wally Mutimer
1428 Merrywood Drive
San Jose, Calif. 95118
(408) 266-3947

Pdr.Wt.	Pdr.Type	Bullet	Velocity	S.D.
38gr.	IMR 4064	150 Sierra M.K.	2524 fps	19
36.5gr.	IMR 4064	168 Sierra M.K.	2435 fps	13
36.5gr.	A.A. 2520	168 Sierra M.K.	2486 fps	8
37gr.	IMR 4064	168 Sierra M.K.	2464 fps	12
37gr.	A.A. 2520	168 Sierra K.K.	2527 fps	11

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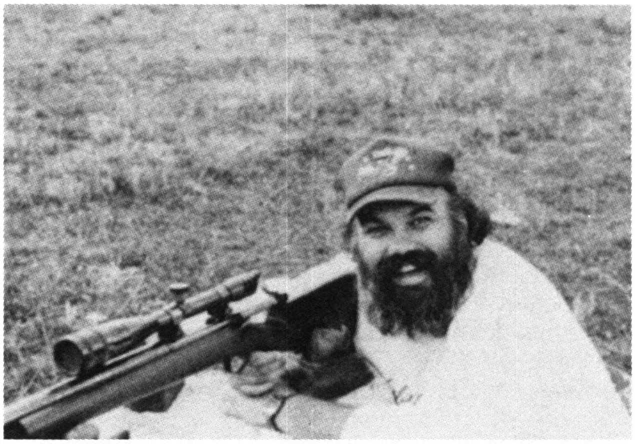
THE ROCKCHUCK CHRONICLES: SHIKARI II

by Richard Kayser



Where do we begin? Springtime Rockchuck shooting in the North West revolves around the weatherman. Late snow and hail storms put the best laid plans in jeopardy. Some people let minor things like a dislocated shoulder or figuring out how to pay for a $15,000 lathe come between them and a good weekend shoot. One even let a little snow keep him home. Others press on regardless, and are rewarded by sunny skies and a day and half bag of eight-three rockchucks by four shooters.

When the invitations went out the list was impressive. To list the cast in alaphabetical order is the only fair way. Allen Allen, Jim Folwell, Russ Haydon, Joe Kelly (the Old Fart), Dan Lilja, Boyd Mace, Mac McCluskey, and myself to host the second annual Shikari. All the replies were positive, and I looked forward to a few lessons from some real longrange masters.

One by one, cancellations came a week or so before the big bash. Jim Folwell was first. It seems he fell poorly. Jim was about forty feet off the ground trimming a tree in his yard, when he pushed the express DOWN!! button on his safety rope. Result: a dislocated shoulder. Joe Kelly called off second. He sold his house in Rock Springs, Wyoming, and is about to move into the new one he had built in Washington. I would have seized any excuse to skip a moving party, but Joe was afraid his wife would take advantage of his absence to do a forty-year cleaning job on him. I have been to Joe's once, and this move is comparable to the one Hercules did on the stables. Mac McCluskey "rainchecked" me with some excuse about buying a $15,000 lathe, and having to work to pay for it in order to keep a roof over his head. Talk about misplaced priorities!

Even my co-host, Boyd Mace called the night before he should have left to give me some story about two feet of snow in the last 18 hours in Casper, Wyoming (new home of the Mace's) marooning him. I personally would consider that added incentive to get out of town for a couple days, but Boyd mumbled some excuse about the Interstate being closed and wants a reschedule when spring hits Wyoming. Maybe....

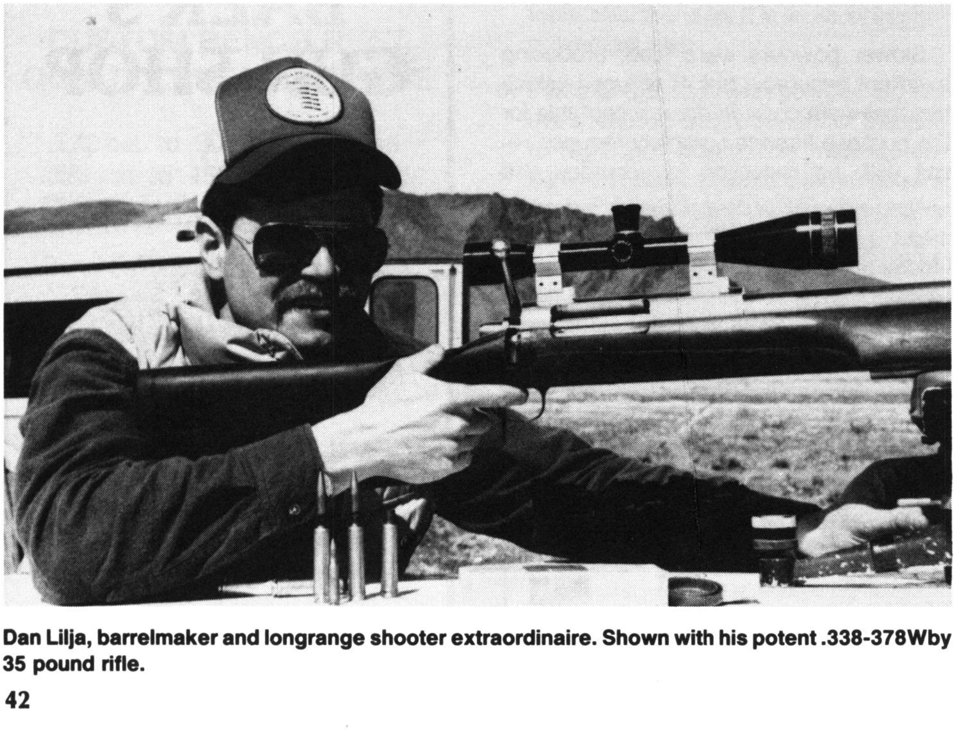
That cut the guestlist to just three; Allen Allen and Dan Lilja from Montana, and Russ Haydon from Tacoma, Washington. It worked to a "T". We were blessed with sunshine, moderate winds and sixty-five degree days. The snow was nearly gone, and the Rockchucks were **out!**

We shot in one spot for nearly five hours on Saturday, and moved then to avoid overharvesting the population. Dan had brought his .240Wby along, and quickly showed all three of us why the 60gr case capacity it shares with the 6mm-284 wildcats is nearly ideal. Four dead Rockchucks in two minutes at 345yds. We have taken to calling him "The Terminator" in deference to his string of thirteen straight chucks at 310 to 490yds with the .240. Allen's .22-250 was stretched a bit at the yardages we had, but killed a couple around 300yds. We moved after several hours to keep from "educating" the survivors. Heading out, Dan and Allen were five minutes in front of Russ and I moving two miles to the other end of the canyon, and found the west end hayfield full of Rockchucks. Their estimate of sixty to seventy rockchucks in a 400 acre field is hard to believe, unless you have been out here to see it. We move in and set up again. This time the closer chucks were less than 275yds, and the .22-250 of Allen and Russ' 40X .222 could get in some effective work.

Darkness curtailed the shooting, and we ran on in to Arco, Idaho for dinner and a good night's sleep. Sunday morning found us at Pickle's Restaurant in Arco for breakfast.

Ask either Dan Lilja or Russ Haydon about the breakfast. Both ordered the pancake meal, consisting of **two pancakes** and an egg and meat. Neither one could finish the pancakes. They are about 1/4″ smaller in diameter than the big plate they came on and 3/4″ thick. Good food at a reasonable price.

Then it was back to the canyon, this time to the north side to try and access the "herd" of chucks Dan and Allen had seen the afternoon before. We shot pretty steadily until 2pm, when a truckload of kids drove



Dan Lilja, barrelmaker and longrange shooter extraordinaire. Shown with his potent .338-378Wby 35 pound rifle.

right across the rim facing us. They picked up all of the chucks we'd shot they could find, and carted them off. I do not know what use shredded chuck is, but they had better than a hundred pounds to play with.

Dan let Russ and I try the .338-378, and I am impressed! Recoil is not bad (due mainly to the 33 lb weight), and the accuracy has to be experienced to be believed. Dan took a reading on a rockpile, and I shot and killed three straight Rockchucks at 610yds with the big gun. Russ Haydon took another one off the same ledge later on that day. I just have one problem going Rockchuck shooting with Dan; he doesn't miss. Dan Lilja killed thirty-eight Rockchucks in a day and a half, and just missed five during that time. Four of them were due to windshifts, and the fifth one moved just as he shot. He made hits with that big .338-378 and his .240Wby, and made the adjustments using his rangefinder and dropchart on both rifle's scopes. I need one of those things.

Russ drove in to my house from Tacoma on Friday about two pm. I loaded my gear in his truck, and we headed for the rendezvous point in Twin Falls. Two hours later we were unloading stuff, and exchanging pleasantries with Allen Allen and Dan Lilja in the motel parking lot. One tremendous prime rib dinner later, the final details of the assault on Idaho's chuck population were being hammered out. Saturday at 7am the convoy moved out northward.

A .222Rem loaded round shown with the 320gr .338 Sierra Matchking bullet and a loaded round. The bullet is 1.830″ long.

I have talked about Rockchucks morning habits before, and this bunch is no exception. They see no reason to move about much before the sun has had an hour to warm up the rocks. By 9:30am Dan Lilja was making sight adjustments based on his Barr&Stroud rangefinder's 490 yard calculation on a rockpile. For those of you that think I am a bit, shall we say . . . overboard . . ? on Rockchuck rifles and cartridges: skip the rest of this story. Dan started the day by unlimbering his 33 pound .338-378Wby and chambering a "pet load" consisting of the new 320 grain .338 Sierra Matchking bullet behind enough slowburning powder to clock 2800+fps out of the 30″ long 10″ twist (Lilja) barrel. Dan also made the action and the rig is reminiscent of the pre-railgun era unlimited rifles. It shoots like one too. Dan chooses to stick with the single-dot reticle in a fixed 24X Leupold target scope. His rationale is that the rangefinder's accuracy (plus/minus 2 yards from 250 to 10,000yds) lets him get the drop from his external ballistics charts and "click" up or down as called for. Leupold is to be commended, for making a product that will stand up under the recoil and retain the precision necessary for shots at long ranges.

Dan's first shot out of a cold barrel hit the chuck at 490yds. The 320gr Sierra does not "launch" a chuck the way Dan's .240Wby or my Banshee does. It just kills them, unless you get a shot with the chuck against a rock. Then the football-sized crater it blasts out of the rock provides enough rockchip secondary missiles to make the carnage a spec-

Continued on next page

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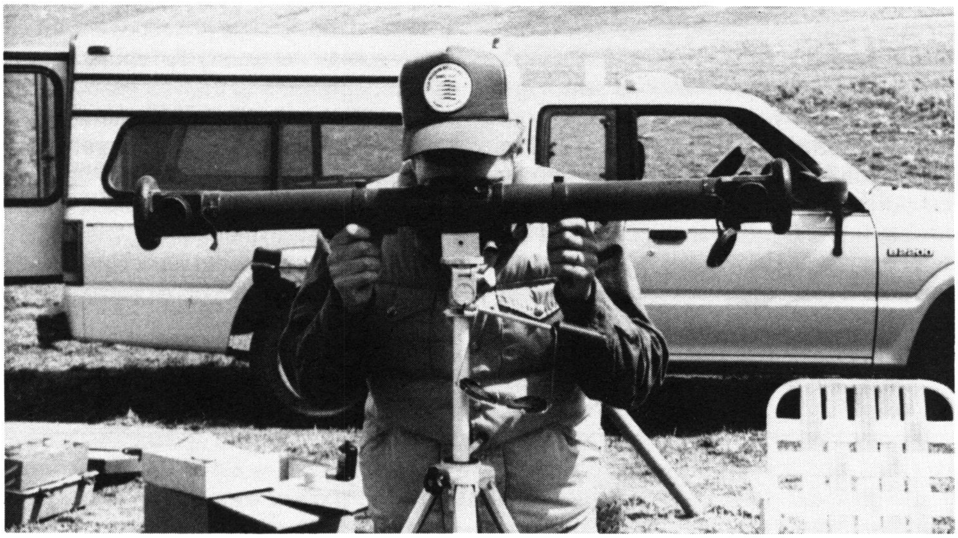
The "Terminator" looking for another Rockchuck.



The last thing thirty-eight Rockchucks saw. Lilja zeroing-in with his WWII Barr & Stroud rangefinder. It never lied to us.

Southeastern Idaho has some breathtaking scenery. The group setting up opposite a big colony on the rockface.

ROCKCHUCK CHRONICLES

Continued

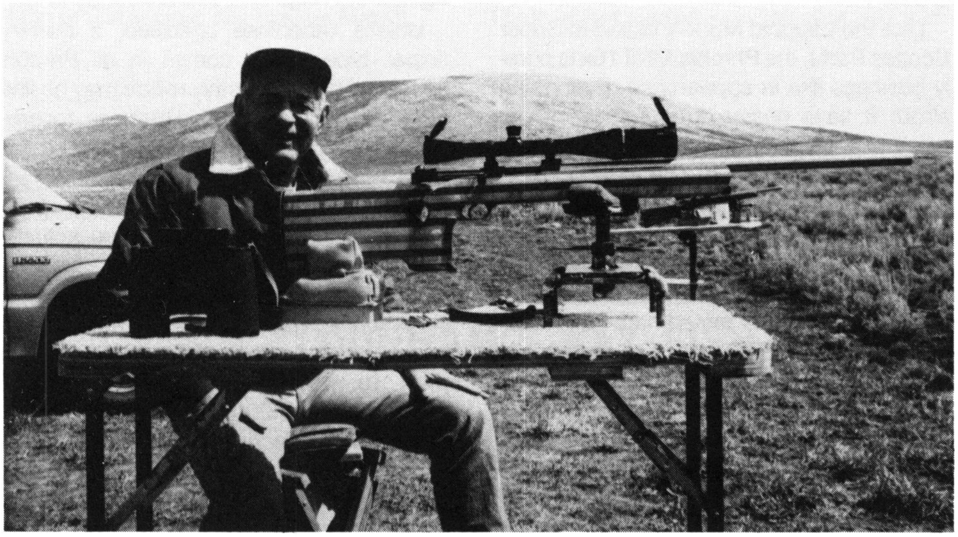
tacular display. We shot four chucks at that first spot, doing a little rifle sighting at the same time. Then we moved up to the big canyon at a friend's ranch and set up for the day.

It was almost eerie watching Dan get the yardage from the RF, read the printout, "click" up or down, and make the shot. The rest of us took advantage of Dan's rangefinder, but did not have the drop charts. I had run one for the Banshee, but being the well-organized person I am left it on the dining room table. I still shot about seventy-five percent but missed some, getting "clicked in". Dick Thomas is doing a Leupold 6.5X20 for me, and I will have it on the Banshee by the time you read this. It will have the +3 and 6 moa dots, 0, and −3, −6, −9, and −12 moa 1/4moa dots and 3 moa windage line L&R. It is still the best way to go, unless you have one of the range finders like Dan Lilja's.

What else can I say? We had great weather conditions, a lesson in shooting from Dan Lilja, and all of us shot well. The longest shot was about 710yds, a first-shot hit by "The Terminator" with his .338-378Wby. Dan and I had the real longrange rifles in the bunch, and those three rifles did the longrange shooting. No Rockchucks were wounded by either one of us, the shooter/spotter system worked to a "T". I watched Dan flip more than one chuck four to six feet in the air, and the Banshee recoil is light enough to allow me to watch the bullet impact most of the time. I took loads with the 100gr Nosler at 4000fps and McCluskey's 86gr LoDrag bullet at 416fps. They perform about the same out to 700yds, and the Rockchucks showed about the same reaction. I had hoped to try out the new production 85gr LoDrags Jef Fowler sent me, but had loaded them in my Roberts. It started blowing primers the morning we were to leave, so I had to shelve it for now. I am going again next week, and will give them a solid test in both rifles. Back to the trip.

Longrange shooting is both an art and a science. It requires both specialized precision equipment, and a lot of practice. There are a few riflemen out here that have both, and Dan Lilja is one of them. I got an education and a lot of information from Dan over the two days we shot and visited. I also got a bad case of the "wants" for an accurate 0-1500 yard or more rangefinder. Does anybody else? I heard of a scope company that has a prototype . . . but does not see a market (500+ units per year) at this time. Maybe we could get some interest here. Anybody want one at $999.95 retail or less? Let me know.

The Montana Mafia, Allen Allen and Dan Lilja open for business. Russ Haydon on the right, using one of the JRW portable rests.



Allen Allen with his crazy-quilt pattern laminated stock. The rifle is a Weatherby MKV chambered for the .22-250. Allen and Dan are waiting on a .224 Clark reamer and JLK bullets.

Allen taking aim on another Rockchuck. He had a run of eight straight from 275-380yds the opening day.

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SUPER SCOPES:

Part Two — Phrobis MK II-16x

by

Scott T. Harrold

I would not be the least bit surprised to find that many of you have probably never heard of the Phrobis MKII rifle scope. In all honesty, until I began this series of scope articles I had never heard of the Phrobis scope, and I ordinarily make it my business to keep abreast of all the new shooting related gadgets. For some reason it often seems that the more specialized an item is, the less it is advertised. To me this appears to be backwards thinking. After all, you have to at least be aware of a certain product's existence before you can be expected to purchase it.

I first learned about the Phrobis scopes from a friend, who had in turn heard about them from an associate of his who saw an advertisement for them in "Shotgun News." Really. The ad in Shotgun News led me to Kiesler Police Supply and Ammunition Co. Inc. Kiesler Supply is the sole distributor of Phrobis scopes in the United States, and so logically I purchased my test scope from them.

The wholesale dealer price of the Phrobis MKII 16x is $895.00. To my door, the grand total came to $903.75, which makes this scope one of the more expensive, if not "the" most expensive scope on the market today. To say I was somewhat hesitant about spending that kind of money on a scope I'd never seen, from a company I'd never heard of would be an understatement. Actually, I was petrified. As it turned out though, I needn't have worried. Both the scopes (I ended up testing two), and Kiesler Supply turned out to be first rate.

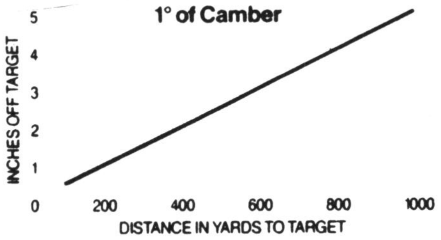
The literature that comes with the scopes states that, "these scopes are primarily a military product and that civilian cosmetics are not a high priority." They aren't kidding. The scopes come in the proverbial unmarked plain brown box. The U.P.S. man even gave me the evil eye when he handed it to me. At $903.75, I wonder what he thought it was. Once I got over my guilt and got the box open, things started to improve.

Like the Leupold Mark-4 tested in Super Scopes Part I, the Phrobis MKII 16x is purely business like in appearance. Everything about it says heavy duty. I didn't know whether to mount it on a rifle or to go and drive some nails with it. The exterior finish on the MKII 16x is a dull black matte that is rough to the touch. The scope's one piece tube is 30mm in diameter, and is made from a special hardened aircraft aluminum. The 16x power scopes I tested had 42 mm objective lenses, 3.75 inches of eye relief, and a 7 foot field of view at 100 yards. The specification sheet that comes with the scopes claims an elevation and windage adjustment range of 130 minutes. However, in actual use I found that the scopes I tested had closer to 146 minutes of adjustment, which may be some sort of a record for an internally adjusted scope. Phrobis also makes this same type of scope in 10x and 20x models, unfortunately I do not have the specifications for these models.

All of the Phrobis scopes have a rather unique vertical post leveling system built into them. This unusual feature is designed to eliminate canting, which could lead to misses at long range. (See illustration.) This built in leveling system also makes mounting one of these scopes a snap. Once you have leveled the rifle, all you do is rotate the scope in the rings until the pointer in the scope aligns with the vertical cross-wire, tighten the rings and you are ready to go.

Unless otherwise specified, a military sniper type reticle comes in all Phrobis scopes. While this heavy reticle may be fine when used for its intended purpose, for precision target work it leaves a lot to be desired. Fortunately, there are many other factory installed reticles available. In fact, because the Phrobis reticles are actually etched on glass, a shooter can request almost any custom reticle he may desire within reason. As this is written, a finer reticle is being installed in one of the test scopes. I plan to further test this scope at Williamsport's 1,000 yard range, and I will report on its effectiveness at a later date.

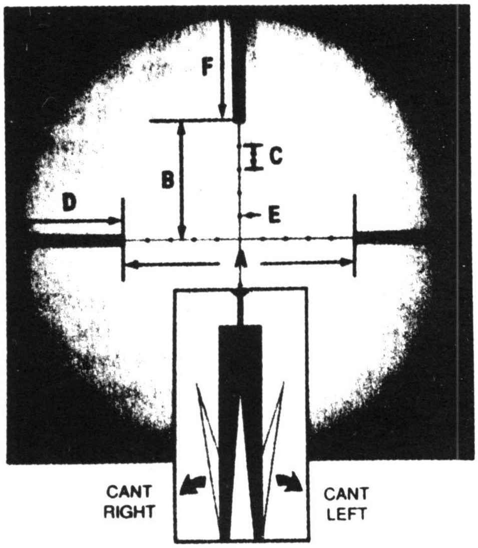
The optical quality of the test scopes presented somewhat of a contradiction. On the positive side, these scopes are extremely bright and seem to transmit the maximum amount of available light even in low light sit-



RETICLE KEY
at 100 Yds.

	20X	16X	10X
A	34.00"	47.60"	68.00"
B	17.00"	23.80"	34.00"
C	3.30"	4.60"	6.60"
D	15.25"	21.40"	30.50"
E	0.25"	0.40"	0.50"
F	15.25"	21.40"	30.50"

How the MKII Eliminates Inaccuracy From Canting.
The proprietary Vertical Post Level System in the MKII helps you keep your weapon in proper alignment. This is crucial to accuracy. As you can see, even a tiny 1° of canting puts you ½" off at 100 yards — and a missed-shot 5" at 1,000 yards.



Drawings showing standard reticle and leveling system.

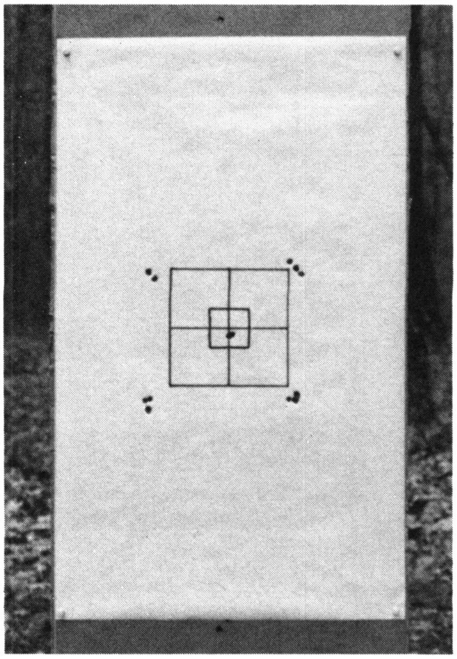


Photo of test number one (square target).

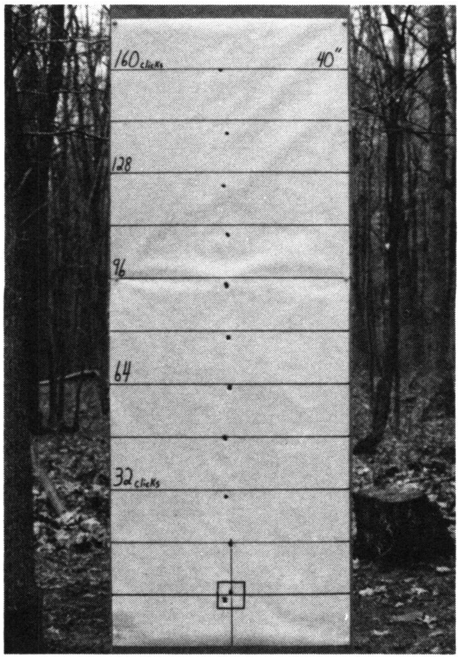


Photo of test number two. 160 click, 40″ test.

Photo of test number three (184 click test). The hairy person on the left is Bruce Baer, the cute one on the right isn't.

uations. On the other hand, the scopes overall clarity appears (at least to me) to be slightly fuzzy. Although this fuzziness was not excessive, it was evident. An engineer at the Phrobis factory told me that this problem was being corrected and that future scopes should be clearer.

For field testing the Phrobis scopes were mounted on the same rifle used to test the Leupold Mark-4 in Super Scopes Part 1. This rifle is a 1,000 yard bench gun chambered for .308 baer mag., built and owned by Bruce Baer. This gun was chosen because it combines the accuracy and heavy recoil needed to thoroughly test this type of scope. Appropriately, the Phrobis scopes were tested in the same manner as the

Continued on next page

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SUPER SCOPES
Continued

Leupold Mark-4 scope tested in Part 1 of this series. These basic elevation and windage tests are designed to challenge a scopes adjustment, integrity, reliability, and repeatability. They will also tell you exactly what one elevation or windage "click" is worth in terms of bullet movement at any specific distance. At least they will if you are paying better attention than I was when I tested the first Phrobis scope.

Before I go any farther, I have to confess to doing something pretty foolish. When I tested the first Phrobis scope, I incorrectly assumed that because none of the bullets hit the target where they should have, that the scope was defective. In fact I was so certain the scope was faulty, that I called Kiesler Supply and asked for another one. The folks at Kiesler said "no problem" and shipped me out another scope, free of charge. While I was waiting for the second scope to arrive, I got to looking at the test targets from the original Phrobis scope. Something simply didn't look right. Despite the fact that none of the bullets hit the target where they should have, the spacing of the bullet holes still looked suspiciously. symmetrical. I got out a tape measure, laid it on one of the targets and immediately felt like a simpleton. There was nothing wrong with the scope at all, the problem was with me and the literature that came with the scope.

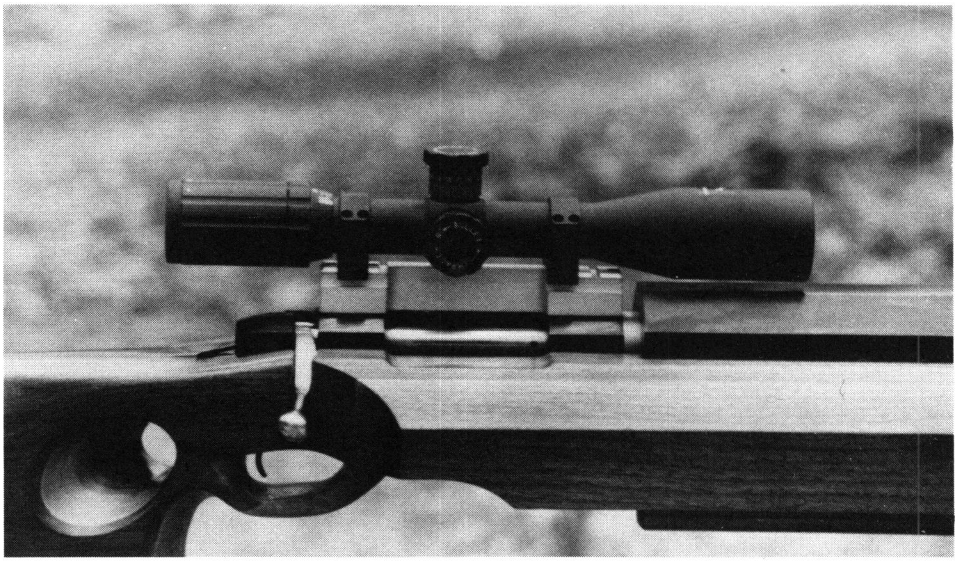
Photo of Phrobis MK II 16x (right side).

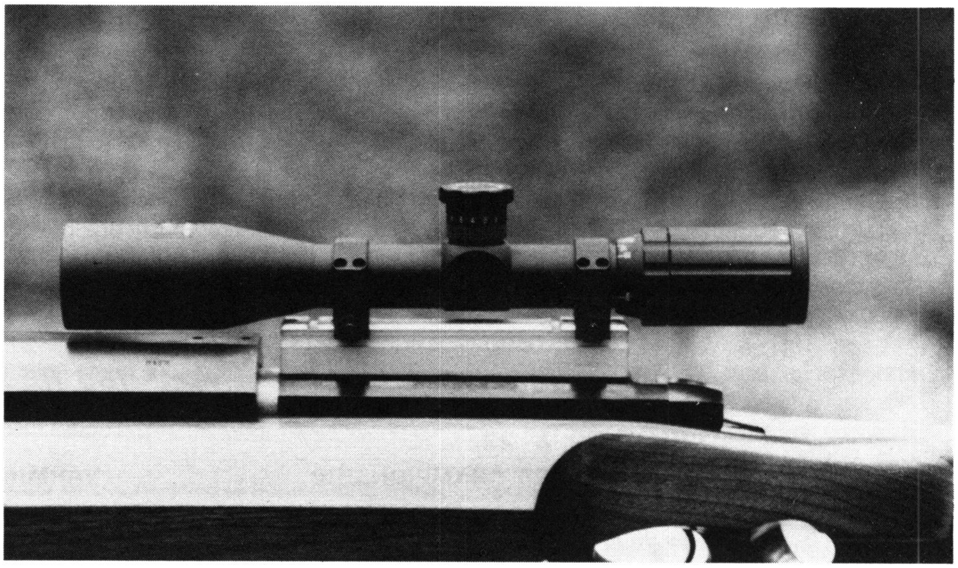
Photo of Phrobis MK II 16x (left side).

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The literature was incorrect and I believed it. In three places the spec. sheet stated that all Phrobis scopes have ¼ minute click adjustments, so naturally I got out targets designed for ¼ minute (.261″) click adjustments and blazed away. It's really no wonder that none of the bullets hit in the appropriate places, when you consider the fact that the scopes actually have ¼″ (.250″) click adjustments. Now, .011″ doesn't sound like a lot, until you multiply it by say 600 clicks. Then you get an error of 6.6″, which is a lot.

.261″ x 600 clicks = 156.6″
.250″ x 600 clicks = 150.0″
6.6″ error

Once I got everything straightened out, I proceeded to test the second scope on ¼″ (.250) targets. The first test was a simultaneous elevation and windage adjustment check. One shot was fired into the center of the target. The scope was clicked down and right 14 clicks. Three shots were fired. The scope was clicked up 28 clicks and three shots were fired. It was then clicked 28 clicks left and three more shots fired. Then 28 clicks down and three shots fired. Finally, the scope was clicked up and right 14 clicks and one shot fired. As you can see in the picture, the last shot went through the first bullet's hole, indicating that the scope had returned to its original zero.

Test number two was a 12 shot, 160 click, 40″ elevation test (160 x .25 = 40″). The two inch square at the bottom of the target was the constant point of aim for all 12 shots fired. The first shot of the test was fired into the center of the square. The scope was then clicked up 16 clicks and one shot was fired. The scope and rifle were clicked and fired in 16 click intervals until a total of 160 clicks was reached. The scope was then clicked down 160 continuous uninterrupted clicks and the last shot fired. Again, as the photo plainly shows, the scope tracked correctly and returned to its original zero.

The third test was an alternating 6 shot, 184 click, 46″ elevation test. Note: This test was shot on a ¼ minute (.261″) target to visually illustrate the difference between ¼ minute clicks and ¼ inch clicks. As in the previous test, the two inch square at the bottom of the target was the point of aim for all shots fired. The first shot was fired into the center of the square. The scope was then clicked up 184 clicks, and one shot was fired. Next, the scope was clicked down 184 clicks, and one shot was fired. I shot and clicked in this same manner until there were two three shot groups on the target. As you will notice in the photo, the top group did not hit on the four foot line. This is correct because 184¼″ clicks equal 46″, not 48″ like 184¼ minute clicks would. A tape measure confirmed that the groups were exactly 46″ apart, and the bottom group was very small indeed considering there were 736 scope clicks between the first and last shot in the group.

In conclusion, I would say that the Phrobis scopes seem to be well made quality instruments worthy of being called Super Scopes.

For more information on Phrobis scopes, call or write:

Kiesler Police Supply and
Ammunition Co., Inc.
3300 Industrial Parkway
Jeffersonville, Indiana 47130
1-800-444-2950

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Phrobis International, L.T.D.
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Redfield 3200 rings, $20. RCBS competition bullet seater, .243 Win., $20. Hart Primer Seater with shell holders for .222, .243, PPC, has a polished 2″x6″x3/8″ stainless base, $65. Nueler Primer Seater with shell holders for .222, .308, PPC, mint condition, $60. Lilja chrome moly barrel .224, 1:14 twist, LV taper, $85. 1980 vintage Sako .220 Russian cases, 300 available in lots of 50 @ $105 ea. John (518) 346-7737.

Smith Corona 1903A3 as issued and unaltered, near perfect condition, spare parts include: barrel, milled trigger guard, misc. springs, screws, etc., $250. Remington 700, 22-250, excellent condition, varmint single shot, magazine plate, Davidson scope mount, dies, and cases, $350. .270 Ackley Magnum 1917 Eddystone Enfield, Pride Barrel, receiver milled flat, Buehler Mount, plain walnut sporter stock, dies, cases, bullets, $150. .358 Ackley Magnum barreled action, Eddystone Enfield 1917, altered trigger guard, rear receiver milled off round, magnum bolt face, sporter barrel not blued, no dies, call Harry, (317) 291-8102.

Burris Hunter Benchrest 6XHBR, fine plex, list $262.95, your cost $155.95. 6Xhbr, .375 dot, list $276.95, your cost $162.95, parallax adjustment, target knobs, 1/8 minute clicks, weighs 13 ozs., add $5.00 shipping & handling. Bill Daley, Box 8, Evans, CO 80620, (303) 356-0015.

6PPC LV, Stolle Panda, right bolt, left port, spiral fluted bolt, Jewell Trigger, McMillan Stock, Kelbly Rings, Hart fluted Barrel, 130 rounds fired, Hart barrel never fired, both have .262 necks, Jones Bore Guide, chamber reamer, Hammond's dies - seater, and neck with several bushings, 100 pieces of brass, the action, rings, trigger guard, and butt plate are highly polished, $2125, with Leupold 24X Scope $2350, State of the Art rig, call Dan after 5 PM, (412) 445-3745.

I.W.L.A. RANGE, YORK, PA.

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SUNDAY, JULY 28, 1991

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6PPC Shilen benchrest rifle, DGA single shot action, Shilen Trigger, Shilen #7, .262 neck, 1:14 twist, stainless select/match barrel, smithed and bedded by Shilen, fiberglas thumbhole stock, Wilson Dies, Leupold 24x with crosshairs, brass, less than 500 rounds fired, a good buy at $1500. Richard (801) 489-7380 nights, or 1-800-339-5891.

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RCBS A-2 Press, $375, would be willing to trade for 24x scope and/or Hart Front Rest. Matt (812) 944-1920.

Burris Hunter Benchrest 6x dot reticle, $167.50; Leupold Compact 6x, AO, $167. One used Lyman 6x, SL, with dot, $125. Factory loaded Remington .222 Mag, 55 gr. PSP, $475/box (49 boxes left). Homemade front rest, 11 lbs.+, $64.95. Federal Nickel Plated .308 brass, $7.95/box (Federal has discontinued this product). Remember us for your Wilson products— well stocked, low prices, Russ Haydon's Shooter's Supply (206) 472-5507 day or eves.

Rem 40x repeater, all original, blued barrel, 26½″, 1-3# Rem trigger, walnut stock, $595 or consider trade on single shot, accurized and tuned action in .222R with stainless barrel. Walt (216) 354-6694.

Rem 40X Rimfire Barreled Action, Barrel turned to sporter dimensions, Rem Trigger, excellent, $400. Hall B, R bolt, R port, McMillan Graphite Stock, New Hart Barrel, 220 Hawk, 20 formed cases, size die, Davidson Bases, $1350. Joe (208) 743-2412 eves.

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.17-221 new (never fired) sleeved XP-100, 700 bolt handle, Shearer SS Barrel, McMillan FG Stock (deep blue), 50 formed cases, form die set, reamer, H-S Gauge, Wilson Seater, and Neck Sizer. $700. Write: B. Simonson, PO Box 277, Schoolcraft, MI 49087.

Lyman Super Targetspot, 20X with shades & cap, factory reconditioned in '88, not used since then, $135. Rem. .308 brass with small primer (BR) lot 43, 7 boxes; lot 7710 6 boxes, take all for $90. 2 Rem. 2 oz. Triggers reworked by Custom Products, solid sear $70. Hart Bullet Spinner complete with wood box and Mititoyo .0001 Indicator, Never Used $150. Dave (801) 942-3980.

6PPC Benchrest sporter Rifle, smithed by Dale Hutcherson, Stolle Panda Action, Hart Barrel, Shilen 2 oz Trigger, Lee Six Thumbhole Stock (Silver), 25 Sako Cases, 9.27 lbs. without scope. As new, $1990. Also, new Triad 2 oz. trigger, $150. Bob (801) 265-4669.

Remington 700, .243 Winchester, Shilen #3 Match Barrel, McMillan Stock, work by Hammond. (717) 677-8215.

New 6PPC Cruiser rifle, Masker smithed, Wichita Action, RH bolt and port, Hart 1.25″ Barrel, Jewell Trigger, McMillan Graphite Stock, Kelbly Rings, $1200. Two new Leupold 36x Scopes - blue $250, Silver - $300. New Stolle Polar Action, 6PPC, RH bolt/LH port, $500. Mike (607) 272-0238.

Everything MUST go. 1000 Bruno 65 gr. FB bullets, 200 Sako PPC-USA cases, AA2015 Powder, Redding 3BR powder measure, 2 shooter's accessories, Wilson dies, Sinclair Priming Tool, neck turner, arbor press, Hart Front rest with HB tops, and much more, $500 takes it all. Mike (607) 272-0238.

Winchester 52C, Canjar Trigger, originally a smallbore position rifle, later a silhouette rifle. All components available. Smallbore position includes laminated wood stock with rails, removable cheek piece, with accessories plus Hart Heavy Barrel. Redfield Olympic Rear, Front, and Tube sights. Stewart adj. aperture for rear sight. Silhouette includes Brown fiberglas stock, Hart light barrel, high scope rings. Will make 10.5 lbs. limit. Original stock and barrel. Package deal $1500. 6PPC Heavy Varmint, Kempfer Action, Kempfer smithed, 2 oz. trigger, Hart Heavy barrel, McMillan Stock, Lyman 25 LWBR, 58 new .220 Russian cases, 33 used cases, 18 lbs. of H-322, 8 lbs. of Norma 201, package deal $1300, John Moulthrop (717) 888-1675.

Wanted: Wichita PPC Action, Six Thumbhole or complete rifle, prefer Six/Shilen thumbhole style or like. (802) 823-7242.

Wanted: Best of PS - Volume 1. Bill (207) 993-2562.

.17 caliber Mach IV barrel, Shilen 5½ contour, 27″ glass peened match stainless, .202 neck, 1:10 twist, 381 rounds through barrel, RCBS Form Dies, Redding FL Size Die, Custom Products Mirco Sizing and Seating Dies with bushings. Barrel fits Remington Action. All items like new. $514 retail/ asking 425. Art (304) 469-2107.

6PPC HV, RH Bolt/RH Port, Hart Action, trigger and two barrels. Smithed by Clarence Hammond for a dedicated BR shooter. Gun comes with rings and .220 Russian cases. Candy Apple Red with bright barrels, $1100. 36x Leupold Dot in Silver, new in box $395, will consider trade. Want to get into live varmint hunting. Days (919) 996-1255, Eves (919) 288-7025. Ask for Bill.

6x47 Loaded Ammo, 68 rounds, 75 gr. Sierra HP. 43 rounds, 60 gr. HP, 100 70 gr. Detsch bullets (all loaded with BR-2 and Norma 200 Powder). $75, or trade for .17 caliber bullets. Joe Parker (602) 797-8510.

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JULY 6th and 7th, 1991

STARTING TIME EACH DAY 8:00 A.M.
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100 YDS. SAT. 200 YDS. SUN.
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(3) PLACES 2-GUN
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R.D. #1 BOX 338
LAWRENCEVILLE, PA 16929
PH. 717-827-2888 (Night)
PH. 607-937-2168 (Day)

SKIP GORDON

Dear Dave,

Plans for U.S. participation in the International Championship are moving along, and the team members we've talked to are beginning to get cranked up.

We have a patch, thanks to the Worlds Greatest Designer of Shooting Patches, Pete Callan. Glenn Newick has designed a lapel pin for sale to team supporters, the profits from which will go to purchase distinctive jackets for the team.

To date we have received $747.00 in response to our original solicitation. We are confident we'll be able to increase this amount - substantially - but there seems to be a mis-understanding, or an attitude I can't fathom, in some quarters. It was expressed to me by a shooter who asked, "Why the hell should I pay for - - - - 's trip to Europe?"

The answer, of course, is that no one is paying for just a "trip". Rather, the benchrest community is being asked to support their friends and peers in an undertaking that should be important to all of us. No one ever anticipated raising any vast amount of money, but we **did** hope to offset some small part of each shooter's expenses.

And I'm still confident. After all, the shooters have always supported the programs with which I've been involved; maybe this time they'll chip in because they know it's Gordon's Last Pitch.

I hope that all of those who've been holding back will re-think their position, and send along a cheque, payable to Benchrest 91 (P.O. Box 233; Budd Lake, NJ 07828).

Many thanks for your support Dave .....it's invaluable.

Cordially

Skip Gordon

PS: It should be mentioned that monies donated to Benchrest 91 will go toward the expenses of **shooters** only. Ed Shilen and I are paying our own way, and George Kelbly, Jr. will be underwritten by the host organization.

GORDON'S LAST PITCH . . . . . a PROMISE

On Saturday September 28 the U.S. team will leave for France and the International Benchrest Championships. These men and women should go confident they have the best wishes and support of their fellow shooters. Sure, it is fun . . . but there is also something special about represnting one's country in international competition.

Benchrest 91 gives each of us the opportunity to say "good luck, I'm with you all the way". A contribution will help offset the shooters' (all non-shooters making the trip are paying their own way) expenses, and show the benchrest world this venture has the support of all Yank shooters.

Obviously, only a tiny bit of the $30,000 that will be spent can be obtained from personal donations. Every contribution is important, though, in terms of support.

This **WILL** be my last effort on behalf of a benchrest program. Over the years you have given generously to the Benchrest Memorial, the Hall of Fame, and the Nate Boop Award project. If you will just give a hand - one more time - I promise you'll never again see me prowling the range, cap in hand, looking to get into your wallets and purses!

Thanks, again, for supporting the earlier projects, and in advance for your assistance with this last one. Cheques should be made payable to Benchrest 91, and sent to Skip Gordon; P.O. Box 233; Budd Lake, NJ 07828.

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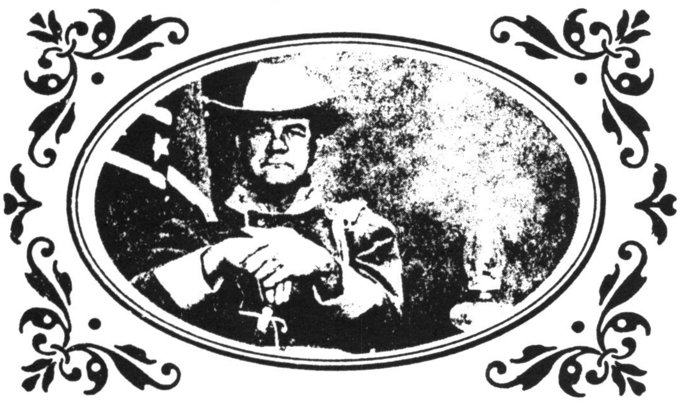

Charlie Threepersons
-1889-

Re: Prairie Dog Hunter's Guide-Montana 90

Thank you for your inquiry regarding the Guide as referred to by John Quinnett in his column "The Last Round" in Shooting Times Magazine. Judging from the flood of requests I have received, it appears that: (1) John is certainly highly regarded and has quite a following and (2) Shooting Times Magazine enjoys a very wide audience of readers. A number of writers/magazines have made note of the Guide but none have had such an immediate response.

No matter what kind of hunting you embark upon, if you don't employ a professional guide at considerable expense, it is likely you will waste one week or two of hunting in orienta--tion; finding where to stay, where to find services, whom to contact for hunting locations, what field conditions may be encountered, best times of the year to hunt...you know how it goes. The Guide is meant to save you time and money in this respect. There is no advertising.

Phillips County, Montana, has an estimated population of 650,000 prairie dogs. Zortman is the headquarters. "People" population is one person per square mile! The Prairie Dogs Hunter's Guide deals with the 5,000 square mile area of Phillips County plus Ft. Belknap. There is some history of the "ranch rodents" and the surrounding area, a list of motels, eating places and similar facilities. There is information on flying in, auto rentals, best time to hunt, how to contact ranchers and where to get additional help.

Many writers tell you all about the wonderful hunting they do..but not how to get there. That's usually a secret and of little use to the reader. I "charted" directions, starting from Zortman, to a large number of prairie dog towns on both BLM land and private property. I reset my odometer to zero and noted, in tenths of a mile, the distance to the towns using such things as cattle guards, signs, turns and similar landmarks to direct the hunter right to the spot. There are some 300 towns in the area for you to explore.

In 1990, BLM replaced most of the wooden signs with a new plastic type and there may be instances where the sign post may not agree with the Guide. This will be updated during my hunt this year.

(209) 439-9512 P.O. Box 9711 Fresno, California 93793-9711

The Phillips County prairie dog hunters have literally formed into a cult and everyone I've ever heard from who went there is going back. A retired airline pilot from Roanoake, Va., drives 2600 miles one way and a doctor from New Orleans flys to Billings and rents a truck. Another doctor from Oregon wrote that he hadn't enjoyed himself so much since he left Kansas 25 years ago! I drive 1500 miles to get there!

It is a good idea to take at least 3 rifles since one will probably get too hot from the shooting! Last year I took 7 rifles and about 7,000 rounds of ammunition. This is not hunting so much as it is shooting. There's a difference.

I highly recommend Precision Shooting Magazine. Besides being of great technical value in most all areas of rifle accuracy, Editor Dave Brennan now includes articles on varmint and prairie dog hunting. I have been an occasional contributor. Write: Dave Brennan, Editor. 37 Burnham St., East Hartford, Conn. 06108. $20 year.

Dave -
Hope this
helps
Chuck

The Prairie Dog Hunter's Guide is priced at $14.95 + $2 for mailing or a total of $16.95. (Canada $18.00). Your personal check is O.K. I always ship the same day the check is received. I've never had one returned.

One more clue: If you plan to go this year, now is the time to get rolling. The "season" starts about June 1 and it is a good idea to reserve rooms, cabins, trailer court and camping space early. The Guide tells you how to do this.

Thank you again for your interest.

C. W. "Chuck" Cornett
(209) 439-9511

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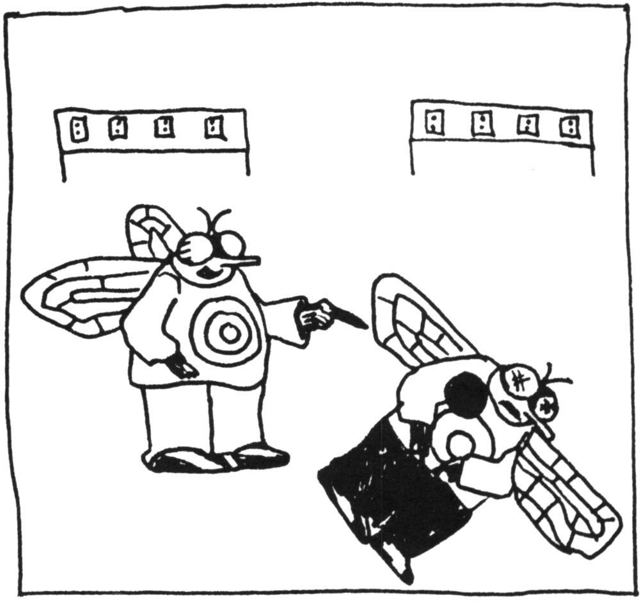
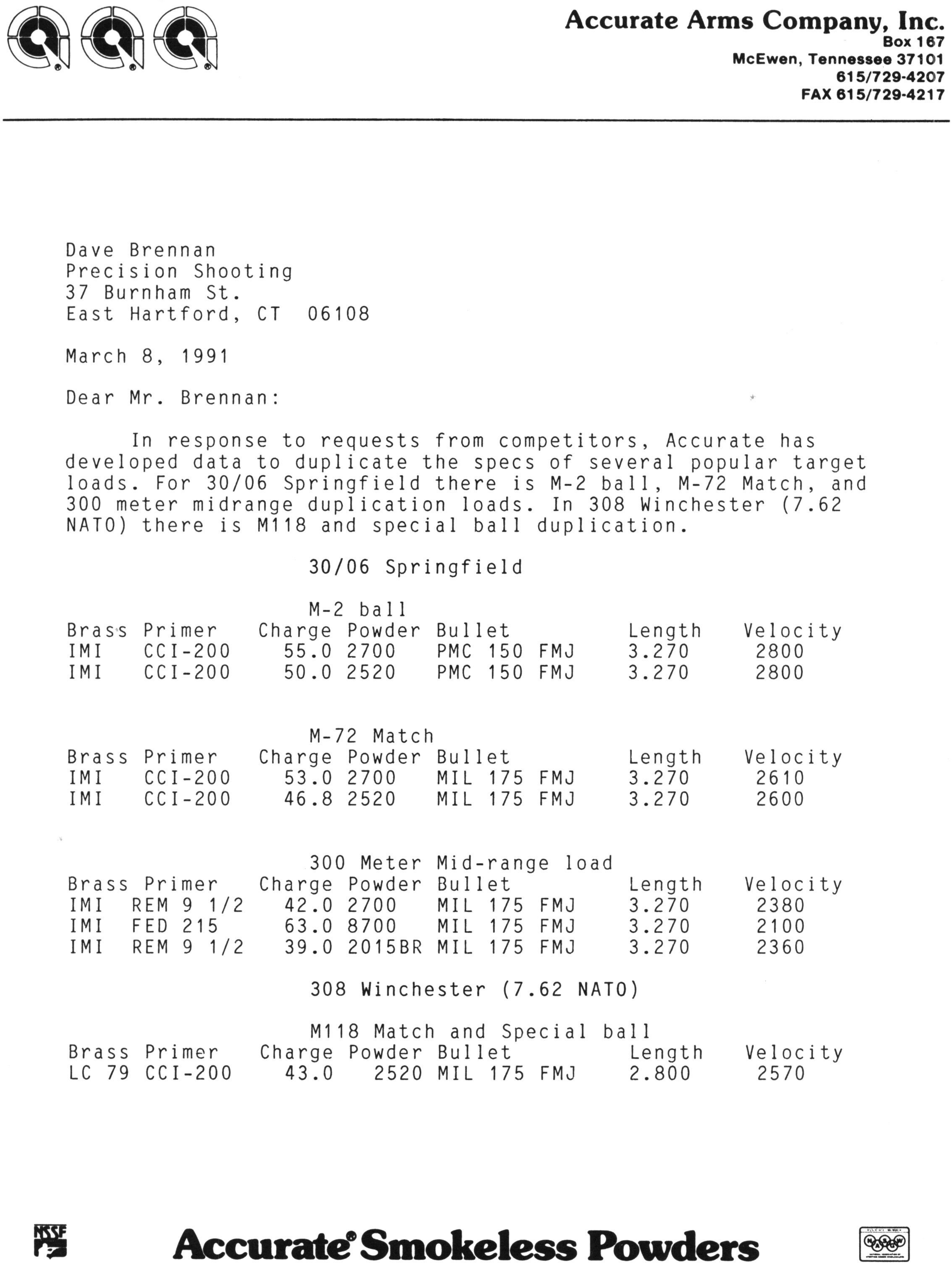
The "Bug Hole"



"I told you it was a bad idea to wear these sweaters to Midland."



Accurate Arms Company, Inc.
Box 167
McEwen, Tennessee 37101
615/729-4207
FAX 615/729-4217

Dave Brennan
Precision Shooting
37 Burnham St.
East Hartford, CT 06108

March 8, 1991

Dear Mr. Brennan:

In response to requests from competitors, Accurate has developed data to duplicate the specs of several popular target loads. For 30/06 Springfield there is M-2 ball, M-72 Match, and 300 meter midrange duplication loads. In 308 Winchester (7.62 NATO) there is M118 and special ball duplication.

30/06 Springfield

M-2 ball

Brass	Primer	Charge	Powder	Bullet	Length	Velocity
IMI	CCI-200	55.0	2700	PMC 150 FMJ	3.270	2800
IMI	CCI-200	50.0	2520	PMC 150 FMJ	3.270	2800

M-72 Match

Brass	Primer	Charge	Powder	Bullet	Length	Velocity
IMI	CCI-200	53.0	2700	MIL 175 FMJ	3.270	2610
IMI	CCI-200	46.8	2520	MIL 175 FMJ	3.270	2600

300 Meter Mid-range load

Brass	Primer	Charge	Powder	Bullet	Length	Velocity
IMI	REM 9 1/2	42.0	2700	MIL 175 FMJ	3.270	2380
IMI	FED 215	63.0	8700	MIL 175 FMJ	3.270	2100
IMI	REM 9 1/2	39.0	2015BR	MIL 175 FMJ	3.270	2360

308 Winchester (7.62 NATO)

M118 Match and Special ball

Brass	Primer	Charge	Powder	Bullet	Length	Velocity
LC 79	CCI-200	43.0	2520	MIL 175 FMJ	2.800	2570

Accurate® Smokeless Powders

We have also developed data for the new Sierra 107 grain VLD design bullet. This is the bullet being tested by the U.S. Army Marksmanship Unit at Fort Benning, GA. They are using the bullets in the 6mm Remington cartridge for 300 meter International competition. Their testing indicates the a 1:8" twist and a velocity of 2925-2940 feet per second gave the best accuracy.

We have developed data for both the 243 Winchester and 6mm Remington cartridges. The data was generated in a 24" pressure barrel with 1:10" twist. No accuracy testing was attempted. Due to the length of the bullet, the overall length used is longer than SAAMI recommended maximum for the cartridges. There were no chambering problems because of the long ogive.

These loads were developed to maximum SAAMI recommendations, a 10% reduction for starting charges would be appropriate. The effect of a 1:8" twist on pressure compared to 1:10" is negligible. The total effect of twist on pressure is 1% or less. Thus a 20% faster twist will result in a pressure change of only 1/5 of a percent.

Data for Sierra 107 grain VLD

243 Winchester

Brass	Primer	Charge	Powder	Bullet	Length	Velocity	S.D.
FED	REM 9 1/2	37.5	2700	SRA 107 HP	2.850	2718	15
FED	REM 9 1/2	39.5	4350	SRA 107 HP	2.850	2814	14
FED	REM 9 1/2	44.0	3100	SRA 107 HP	2.850	2898	5

6mm Remington

Brass	Primer	Charge	Powder	Bullet	Length	Velocity	S.D.
FED	REM 9 1/2	43.5	2700	SRA 107 HP	3.200	2914	11
FED	REM 9 1/2	45.5	4350	SRA 107 HP	3.200	2973	11
FED	REM 9 1/2	48.0	3100	SRA 107 HP	3.200	2925	9

We were hoping you could find room in Precision Shooting magazine to list these results. It would be beneficial to the competition shooters that read your magazine.

Thank you,

William J Falin

Bill Falin
Ballistician

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KEITH FRANCIS

Mr. Dave Brennan
Precision Shooting
37 Burnham Street
East Hartford, CT 06108

Dear Dave,

It's hard to write with my foot in my mouth, but here goes. It seems some folks thought that I was referring to Jim Borden when I made a thoughtless crack about a "junior" engineer in the Catbird issue.

What I meant to get across and what I should have elaborated on was the point that a JGS PPC reamer, off the shelf, would be no smaller than minimum chamber. We've had requests for some and I've been able to convince them otherwise. The other point was the use of Cerrosafe; it's good but complicated. I've used Cerrosafe, sulphur and a special gauge casting powder to which a chemical was added and used at room temperature. The casting powder was my favorite, although a little brittle. The steel ball system is still the best, but in some cases a chamber cast is still required -- Weatherby type shoulders, the 5.56mm NATO with the "double" shoulder angles of 23 deg. and 11 deg. 30 min., etc. What I didn't say was that although Jim and I used different methods, we both arrived at the same specs for the new U.S.A. body within .0001". I spoke with Jim about this and his choice of a shorter freebore. Most of the tightest groups have been fired with a freebore in the .020" range. I used Jim's specs and I named the new prints 22 and 6mm PPC-USA-BORDEN. I then pushed a couple of orders through the shop, and we now have them in stock.

What got me in trouble was my rambling on about the U.S.A. brass being too big for the chamber and referring to whoever made the decision as a "junior" engineer. I regret the comment, as I'm sure that the engineer is quite qualified as such but overlooked the problem that brass larger than .4400 x .125 and .4300 shoulder diameter would cause. My letter was not precise and clear, but I was not referring to Jim Borden. You wouldn't need an engineering degree to come up with the new specs, just ask any ole PPC shooter if he'd like larger brass; the same holds true for the new chambers -- please don't make it any bigger than it is now.

Anyway, it was this and other simple mistakes we find on SAAMI, CIP and Treible prints that prompted the use of "junior" engineer.

May the tightest group be yours (unless I'm there).

Regards,

Keith

Keith Francis

KF:cee

P.S. I haven't found any errors in the German prints, but if I did I'd attribute them to "junior" engineers -- doing the paper work.

R. G. Robinett, Director
P. O. Box 72
Madrid, IA 50156
(515) 795-2906

Terry Meyer, Co-Director
R. R. 1, Box 50
Thornton, Iowa 50479
(515) 998-2860

TCL
Ameri-Con-News

American Conference, Transcontinental Hunter Rifle League

BLIND FREDDY MOB	BLACK STUMP MOB	BUSH MOB	IN IT MOB
Mainville	Golden	LaGrande	Van Dyne
West Texans	North. Colo.	Dakota	Cent. Tex. N.
Minnetonka	Prairie Dog	Red Lodge	Richmond
Holmen	Redwood	Buffalo	Cody

Gentlemen, the game is set! The flush will produce both hits and misses – possibly a cripple or two. Terry Meyer has hatched a credible schedule, including a "grudge match" featuring LaGrande, OR and Minnetonka. This rematch was demanded by the embarrassed Beavers after suffering a humiliating defeat (a monumental 1 point "blow out") hewn by the Vikings last August.

Regretfully, the American Conference lost a perenial title contender (Tri-Co., Oregon) to the National Conference; the American Conference is diminished by this loss. We will miss "Judy's boys."

Simultaneously, a "new" club wanted in. Graciously, Mike Prokosch has "consolidated" his Minneapolis, MN area teams into one. As a result, we remain balanced, i.e. – an "even" number of teams in the conference.

Shooters from the old Bald Eagle (basically factory rifles) will find it difficult to "qualify" (this is the only negative impact of the consolidation.)

The schedule, without Tri-Co. and Bald Eagle becomes much more interesting, as it is extremely difficult to schedule "1190" clubs while not providing a couple of "cake walks". The net result of the atrition then is positive – effectively raising the average team score.

The real bonus: The infusion of "new blood" into Hunter Class competition. Generaled by one Jim Guedman, the Eureka, California mob is committed to both accurancy and success. Mr. Guedman has been forwarned regarding the league coordinator's tendencies to humiliate, slander, and provoke via off-color and verifiably snide written comments in the Ameri-Con News. Mr. Guedman has assured the maniacal coordinator that both he and his cohorts are possessed of (at least some) humorous sense – we shall see! For now, we'll just call them Bozos.

The Bluegrass, KY team, has decided to drop out of the American Conference for 1991. They shot all of last season on a borrowed range – let's hope that they complete their new facility before the 1992 season – we will maintain an open door policy for "Bluegrass".

So, a net loss of two teams makes life easy for "Terrible Terry". Anyone having "trouble" with his own schedule, contact the "Terrible One" . . . and pray that he isn't in one of his "moods!"

Adding a group of initiates (Eureka, Calif.) demands a rehash of TCL policies (some may read rules): Shoot on either official I.B.S. or NBRSA 100 yd. "Hunter Rifle" targets at 100 yd.; Conform to either I.B.S. or NBRSA Hunter Rifle Rules (Equipment, etc.); run your matches in any honest manner which is acceptable to your club membership; i.e., make-up scores are o.k., etc.!

The TCL is supposed to be fun. If you have something to prove, attend Hunter Nationals and show us what you can do there! If clubs want to "Get together and shoot our "score" the first calm Wednesday evening in June" – so be it! The TCL will not establish unnecessary rules.

The TCL concept (from my perspective) – promote teamwork and the free exchange of knowledge; fostering improvement in not only individuals and equipment, but also the sport of Bench Rest shooting while having fun. Again, for those who would impose stricter (and probably unenforcable) rules – lighten up. If you take yourself seriously, attend either the IBS Score Shooting Nationals or the NBRSA Hunter Nationals and show us what you can do there.

The American Conference will not accept the following: Reshooting scores; replacing a bad score with a "blind" score; carry over-scores - i.e., a non-qualifying score from last month replacing a lower score for "this" month. Proof of either of the above will mean disqualification. Other than the previously mentioned forms of cheating, the rules are simple: honesty and "fair play" should prevail. Declare your intentions and follow through. Get your people together, preferably via registered matches, and enjoy the moment – I can't control the weather in Cody, WY . . . yet!

Remember the guidelies from the old days . . . 10 shooters or more, someone's being absent should not hurt you very badly – be "tougher" on your requirements; less than 10 shooters (especially with only 5 ot 6) calls for more flexibility, i.e., make-ups, etc. – just be honest and fair. That's all the policing I care to do with a postal situation.

We do encourage our clubs to hold and attend registered matches – the cornerstone of knowledge and progress.

R. Robinett

MAY 1991	JUNE 1991	JULY 1991	AUGUGST 1991
Mainville ....No. Colorado	Cody ....Van Dyne	Minnetonka ....LaGrande	Mainville ....LaGrande
LaGrande ....Cody, WY	LaGrande ....Red Lodge	Mainville ...................P.D.T.C.	No. Colorado ....Cody
Red Lodge ................P.D.T.C.	Goldenq ....No. Colorado	Cody ....Red Lodge	Minnetonka ....Red Lodge
Minnetonka ....Golden	Mainville ....Minnetonka	Van Dyne ....Cen. Tex. No.	Golden ....Van Dyne
Van Dyne ....West Texans	Wet Texans ....Holmen	Richmond ....Redwood	West Texans .............P.D.T.C.
Dakota ....Richmond	Redwood ....Cen. Tex No.	Holmen ....Buffalo	Dakota ....Cen. Tex. No.
Buffalo ....Redwood	Dakota ....Buffalo	Golden ....Dakota	Buffalo ....Richmond
Cen-Tex No................Holmen	P.D.T.C. ....Richmond	No. Colorado ......West Texans	Redwood ....Holmen

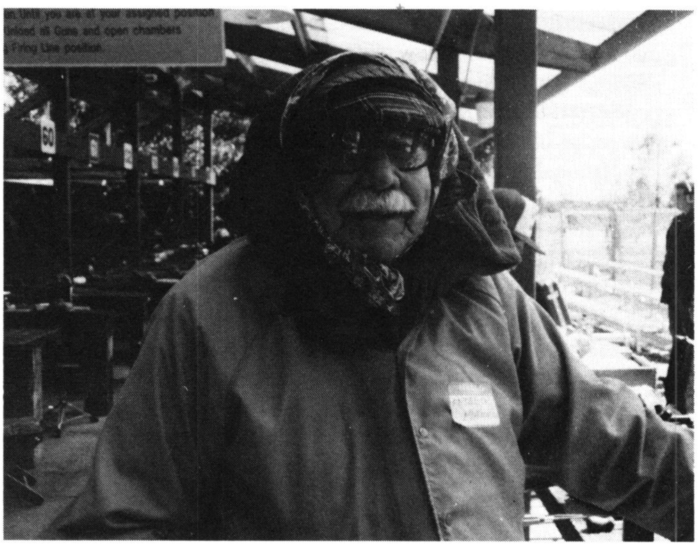
IBS News

Edited by Dave Brennan

TRIVIA QUESTION OF THE MONTH

Where are these fellows shooting, on February 17, 1991?

Left to right: Bob Waechter - "Slick" Mann - Tony Hidalgo Jr. - and Mr. Ed Shilen.



"Slick Mann sure looked like he needed a wee bit of brandy.

Mr. "Slick" Mann — Man was it cold.

"Doc" Manny Garcia.

Answer:

SUNRISE, FLORIDA

FLORIDA

The Florida Benchrest Championships: Sunrise, Florida, February 16 and 17, 1991.

A few words from El Presidente:

Yes, the rumors are correct. We did have to wear long pants and shirts (and sweaters and jackets for that matter) as the 15 knot plus winds did put the Saturday morning wind chill factor to about forty degrees. By noontime, however, the temperatures were in the sixties. Sunday's temperatures went into the Mid-Seventies with the morning breeze dropping to about 5kts. This was a tough situation for some of our "Snowbird" shooters as they had enjoyed comfortable eighty degree temperatures for the past couple of weeks. The only frost they saw came in twelve ounce containers. It was noted, however, that some crystalline structure was forming on the rim of the Margarita glasses. I guess that Mexican Booze freezes at temperatures below 90.

Fourteen shooters went for the gold in the Light Varmint category. Dave Way was wearing the right color glasses as he saw the holes and shot his way between the wind gusts and switchbacks to take a well deserved first place. Ed Watson (Mr. Consistent) shot very smoothly into second place. Third place was won by Bob Demonstoy who also had the small group of .140″.

Heavy Varmint attracted twenty competitors. Clarence Hammonds made the madness seem so very easy and captured a strong first place. Clarence "Dusty" Rhodes turned on in the second match and shot his way into second place. Dave Way, not to be left out, got hot in match number three and captured third place. The small group of .157″ was punched out by Gene Davis.

Sunday morning's Varmint for score was fiercely contested by Clarence Hammonds, Ed Watson and Dusty Rhodes. All three shot Hammond's built Hall action 6PPC rifles. For a while no one could tell them apart other than the difference between metalflake and painted flames on the stocks! It took Creedmore rules to break the First Place tie. As they sped through the last furlong and broke the wire it was Rhodes by a nose followed by Hammonds who barely outpaced Watson.

A horse race also occurred in the Hunter championship with Dick Miller just edging out Ira Farnsworth who was followed by Bill Verdries. Dick took most of the X's which became real illusive as the winds picked back up on Sunday afternoon.

I would like to thank all of the competitors who shot with us. Special thanks go to Ed Watson and Clarence Hammonds who have been with us since the start. We hope to see you both, the Waechters, Bob Demonstoy, Tim Cantwell, Bob Linn, Ed Shilen, Dave Way and Ira Farnsworth again next year.

The Tournament in 1992 will have three days of shooting for both Varmint classes, Sporter, Unlimited, Hunter and Varmint for score. The match will also be dual sanctioned for IBS and NBRSA.

Geoff Pearson

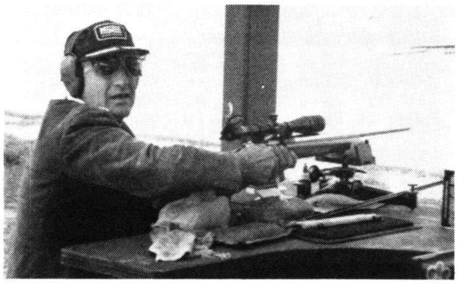
P.S. My warmest regards to the members of the FBSA who each gave of themselves in order that we could pull this tournament off and still have a good time. Thanks.

Light varmint class: 1.) Dave Way .2919, 2.) Ed Watson .3544, 3.) Bob DeMonstoy .3558, 4. Clarence Hammonds .3748, 5.) Tim Cantwell .4724.

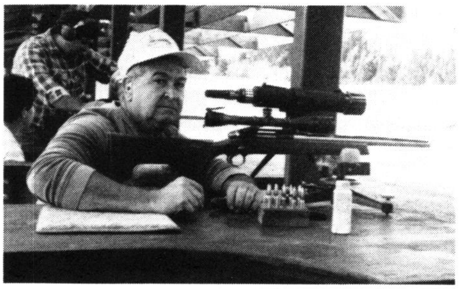
Heavy varmint class: 1.) Clarence Hammonds .2762, 2.) Dusty Rhodes .3196, 3.) Dave Way .3318, 4.) Tim Cantwell .3678, 5.) Tony Heeb .3904.

Varmint for score: 1.) Dusty Rhodes 250-18x, 2.) Clarence Hammonds 250-18x, 3.) Ed Watson 250-17x, 4.) Ira Farnsworth 250-12x, 5.) Ed Shilen 250-11x.

Hunter class: 1.) Dick Miller 242-7x, 2.) Ira Farnsworth 241-6x, 3.) Bill Verdries 240-4x.

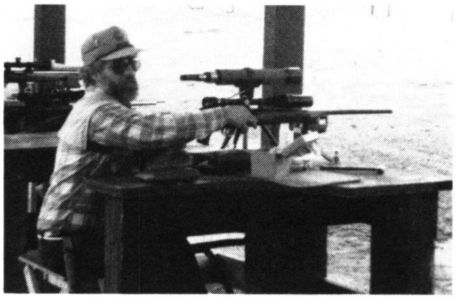


Dick Miller - 1st place hunter, local FBSA member.



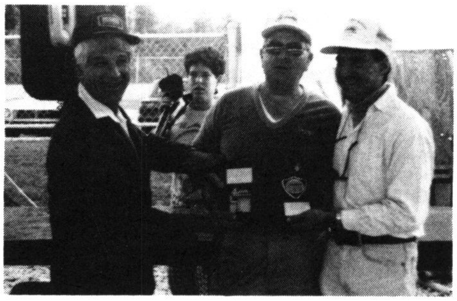
Tony Hidalgo Sr. - Mr. FBSA.

Tony Hidalgo Jr. - one of the main workers at FBSA.



Bill Verdries - local FBSA.

Ira Farnsworth.



Dick Miller - Tony Hidalgo Sr. and Geoff Pearson.

Dick Miller - 1st place hunter.

Ira Farnsworth - 2nd place hunter.

LIGHT VARMINT WINNING EQUIPMENT

NAME	CAL.	ACTION	BARREL	GUNSMITH	SCOPE	LOAD	BULLET	PRIM
DAVE WAY	6PPC	CPS	HART	GREENAWALT	LEU 36	27.5 T32	BERGER 68	205M
ED WATSON	6PPC	HALL	SHILEN	HAMMONDS	LEU 36	28.0 T32	WATSON 68	205M
R.DeMONSTOY	6PPC	HART	HART	MASKER	LEU 36	28.0 T322	OWN 68	7 1/
C. HAMMONDS	6PPC	HALL	SHILEN	HAMMONDS	LEU 36	27.0 T32	WATSON 68	205M
T. CANTWELL	6PPC	STOLLE	SCHNIED	SPEEDY	LEU 36		OWN	205M
DOC GARCIA	6PPC	SHILEN	SHILEN	HAMMONDS	LEU 36	27.8 T32	WATSON 68	205M
GENE DAVIS	6PPC	HART	HART	SINCLAIR	B&L 36	H322	WATSON 68	7 1/
ED SHILEN	6PPC	DGA	SHILEN	SHILEN	LEU 36	27.5 322	8-S 68	205M
SLICK"MANN	6PPC	HALL	HART	MESSER	B&L 36	28.0 T32	WATSON 68	205M
HIDALGO JR.	6PPC	SHILEN	HART	TOTH	LEU 36	28.0 T322	EUBER 68	205M
C.H.RHODES	6PPC	TROPHY	HART	KELBLY	LEU 36	27.3 T32	WATSON 68	7 1/
RON JETER	NO INFO							
BOB LINN	22PPC	REM	HART	HAMMONDS	LYM 25	25.5 GI322	WATSON 52	205M

HEAVY VARMINT WINNING EQUIPMENT

NAME	CAL.	ACTION	BARREL	GUNSMITH	SCOPE	LOAD	BULLET	PRIM
C. HAMMONDS	6PPC	HALL	SHILEN	HAMMONDS	LEU 30	27.0 T32	WATSON 68	205M
C.H.RHODES	6PPC	HALL	HART	HAMMONDS	B&L 36	27.3 T32	WATSON 68	REM
DAVE WAY	SH6BR	TEDDY	HART	KELBLY	LEU 36	27.3 T32	BERGER 68	205M
T. CANTWELL	6PPC	STOLLE	SCHNEID	SPEEDY	LEU 36	27.0 T32	OWN	205M
TONY HEEB	22PPC	KEMPFER	HART	KEMPFER	L/S 30	27.0 H322	WATSON 52	205M
ED WATSON	6PPC	HALL	SHILEN	HAMMONDS	LEU 36	28.0 T32	WATSON 68	205M
HIDALGO JR.	6PPC	SHILEN	HART	TOTH	LEU 36	28.0 T322	EUBER 69	205M
HIDALGO SR.	6BR	40XBR	HART	CPS	L/S 30	29.0 T322	EUBER 68	205M
ED SHILEN	6PPC	DGA	SHILEN	SHILEN	LEU 36	27.5 322	WATSON 68	205M
R.DeMONSTOY	6PPC	STOLLE	HART	MASKER	LYM 30	28.0 T322	OWN 68	REM
GENE DAVIS	6PPC	HART	HART	SINCLAIR	B&L 36	H322	WATSON 68	7 1/
BOB CARY	6PPC	XP100	HART		LEU 36	27.3 H322	BERGER 68	205M
SLICK"MANN	6PPC	HALL	HART	MESSER	B&L 36	28.0 T32	WATSON 68	205M
DOC GARCIA	6PPC	SHILEN	SHILEN	HAMMONDS	LEU 36	27.8 T32	WATSON 68	205M
BOB LINN	22PPC	REM	HART	HAMMONDS	LYM 25	25.5 GI322	WATSON 52	205M

VARMINT FOR SCORE WINNING EQUIPMENT

NAME	CAL.	ACTION	BARREL	GUNSMITH	SCOPE	LOAD	BULLET	PRIM
C.H.RHODES	6PPC	HALL	HART	HAMMONDS	B&L 36	27.3 T32	WATSON 68	7 1/
C. HAMMONDS	6PPC	HALL	SHILEN	HAMMONDS	LEU 30	27.0 T32	WATSON 68	205M
ED WATSON	6PPC	HALL	SHILEN	HAMMONDS	LEU 36	28.0 T32	WATSON 68	205M
FARNSWORTH	22PPC	40XBR	CHANLYN	SELF	PREM 36	28.1 4320	CHISM 150	7 1/
ED SHILEN	6PPC	DGA	SHILEN	SHILEN	LEU 36	27.5 322	8-S 68	205M
DOC GARCIA	6PPC	SHILEN	SHILEN	HAMMONDS	LEU 36	27.8 T32	WATSON 68	205M
T. CANTWELL	6PPC	STOLLE	SCHNEID	SPEEDY	LEU 36		SELF	205M
R.DeMONSTOY	6PPC	STOLLE	HART	MASKER	LYM 30	28.0 322	OWN 68	7 1/
HIDALGO JR	6PPC	SHILEN	HART	TOTH	LEU 36	28.0 T322	EUBER 68	205M
TONY HEEB	22PPC	KEMPFER	HART	KEMPFER	L/S 30	27'0 H322	WATSON 68	205M
BOB CARY	6PPC	XP100	HART		LEU 36	27.3 H322	BERGER 68	205M
BOB LINN	22PPC	REM	HART	HAMMONDS	LYM 25	25.5 GI322	WATSON 52	205M
HIDALGO SR	6BR	40XBR	HART	CPS	L/S 30	29.0 T322	EUBER 68	205M

HUNTER CLASS WINNING EQUIPMENT

NAME	CAL.	ACTION	BARREL	GUNSMITH	SCOPE	LOAD	BULLET	PRIM
DICK MILLER	308	REM 700	HART	HART	LEUP 6X	39GR RL11	CHISM 150	FED
I.FARNSWORTH	308	REM 700	HART	FARNSWORTH	LEU 6X	48.0 760	SIERRA 168	FED
VERDRIES W.	308	REM 700	REM	REM				
HIDALGO SR.	308	REM 700	HART	TOTH	T6	40.0 RL12	CHISM 150	FED
HIDALGO JR.	30X47	REM 700	HART	CPS	LYM 6X	36.0 RL12	CHISM 150	FED

TARGETS

Target No.	Target Description	Quantity	Total Weight	List Price per 100
IBS-B/1	100 YD Benchrest—Black 8x15½	500	15	7.00
IBS-B/2	200 YD Benchrest—Black 8x16½	500	15	7.00
IBS-B/3	300 YD Benchrest—Red 12x23½	250	19	21.50
IBS-H/1	100 YD Hunter—Black 12x19	250	14	10.50
IBS-H/2	200 YD Hunter—Black 13x21	250	15	10.50
IBS-H/3	300 YD Hunter—Black 13x26	250	22	25.50

Prices are PER HUNDRED TARGETS
Add Freight from table below

* **SHIPPING/HANDLING** — CONTINENTAL USA ONLY

UPS Ground	Up to 10 lbs.	Up to 24 lbs.	24-49 lbs.	50-74 lbs.	75-99 lbs.	100-149 lbs.	150-199 lbs.	200 lbs. & over	C.O.D. ADD
ADD	$4.00	$7.00	$12.50	$16.50	$24.50	$40.00	$56.50	Truck Rates	$3.50

Determine shipping/handling price by totaling catalog weights per item.

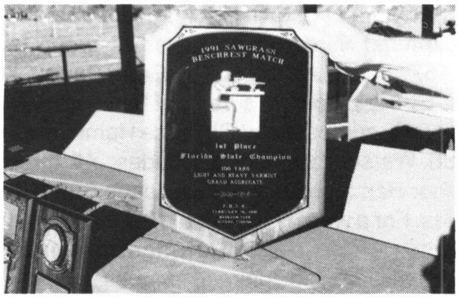
Order Targets in carton lots only

Speedwell Division, Rockwood Corporation, 136 Lincoln Blvd., Middlesex, NJ 08846
201-560-7171 or 800-243-8274

Ed Watson - 2nd place LV.

Dusty Rhodes - 1st place, varmint for score; FBSA Pres. Geoff Pearson.

Clarence Hammonds - HV winner, Geoff Pearson and Ed Watson.



Two Gun Trophy - A nice item for Dave Way to take back to Pa.

CAPITOL CITY

April 7th was a windy one in Augusta, Maine, as a whole bunch of shooters will testify.

Hunter class (6 shooters): 1.) Joe Gilbert 247-12x, 2.) Dan Caruso 247-8x, 3.) Peter Hills 243-5x.

Varmint hunter class (7 shooters): 1.) Blaine Johnson 249-13x, 2.) Dwight Furrow 249-12x, 3.) Dan Caruso 249-11x.

Varmint for score (9 shooters): 1.) Blaine Johnson 249-11x, 2.) Dan Caruso 249-8x, 3.) Joe Gilbert 247-10x.

President's Message

Something new, something old!

What's new? Several of our score shooting clubs will be holding matches for rim fire rifles this summer. The Dunham's Bay Club has held matches this winter with encouraging participation. Please see the IBS score schedule for the location of clubs holding these matches. We must inform the smallbore shooters of these matches and encourage them to attend. This could become a valuable tool for introducing shooters to benchrest shooting.

What's old? I and several other members of the executive board have had inquiries concerning the IBS Precision Rifleman/woman awards. Some of these questions have been: What is the program?, How many points do I get for winning an aggregate, grand, two gun, etc.? The answer to all of these questions and more are in the IBS rule book. All shooters who are participating in registered matches should have a copy of this book. This is available from Joan Borden, whose address is listed in the IBS officers listing of this magazine. The price of this rulebook is $7.00. As this is written Paul Ryan is updating the Precision Rifleman point totals. Please do not call Paul for your point total as the entire list will be printed in a future issue of PS. Updating and maintaining this list of points has taken hundreds of hours of work. We owe a big thank you to Jim and Joan Borden, and Paul Ryan for their efforts in this task. One of the biggest misconceptions about this program is that IBS keeps track of each shooters' point total. In fact, it is the shooter's responsibility to track his or her own points and inform the second vice president when a level of achievement has been reached. This will then be verified. I hope that this has answered most of the shooters questions about this program.

Good shooting,
Jim Oliver

DUNHAMS BAY

It was BOB GRIFFIN's day at The Bay on April 7th . . . his .2458 was good enough to beat out 45 other shooters . . . which made it a pretty good-sized match. Top ten shooters for the day were: 1.) Bob Griffin .2458, 2.) Tom Peria .2574, 3.) Al Gustafson .2584, 4.) Earl McFarland .2700, 5.) Brain Hollister .2882, 6.) Jim Greenawalt .2948, 7.) Barry Devleigher .3024, 8.) Dick Denton .3046, 9.) Don Sargood .3080, 10.) Myles Hollister .3100. The agg winner shot a Seely Masker smithed and stocked 6PPC, with a Hall action and Hart barrel, B&L 36X scope, 27.6 grains of 2015 (!) with 62 grain Watson bullets and Winchester primers (!).

FRAN VAHLE beat out 5 other shooters to win the hunter class, via a 244-7x figure. Balance of top 3 were: 2.) Rocky Murray 244-6x, 3.) Brian Niemi 242-8x.

THE SCORE SHEET

Probably the most misunderstood rule in IBS Score Shooting is the Crossfire Rule. Now that the new season is underway it might just help to review the procedure on crossfires for old and new shooter alike. It takes but one second to make sure one is shooting at his/her target (always check the competitor number). However, an oldtime (no reference to editor) shooter once said, "If you shoot, you will crossfire." When this happens, following is the proper procedure.

A crossfire occurs when a competitor shoots on another target (whether the bench is occupied or not). Say a competitor is shooting at Bull #3 but is mistakenly aiming at another target (a crossfire has occurred). This is a basic law of shooting: **A bullet goes where you aim!** DO NOT GO BACK AND SHOOT BULL #3 ON YOUR TARGET!! This action can be construed as trying to conceal a crossfire and result in disqualification. Continue to shoot bull #4 and 5. Once a crossfire has occurred **calmly** report the crossfire to the range officer ASAP, there is no need to upset the entire firing line.

The scorer will transfer the crossfire shot to the empty #3 bull and deduct a 1 point penalty from the score. Remember a 1 point penalty is better than a disqualification.

Keep your eyes open at the matches this season (don't want anyone to trip) for a new old caliber. Two 7mm-08's will be on the line in Hunter Class. One will have a 1-12 twist barrel and the other will have a 1-10 twist barrel. The early testing has found the 7mm-08 to produce about 2900 fps (not bad). The bottom line is it looks great at 200 and 300 yards but a little short of the .308 at 100 yards. Hey switch barrels in Hunter Class! Does anyone have a 100 yard workable load?

Through the efforts of **Jim Zeyn, Vince Pastorella,** and **Joe Gilbert** the 200/300 yard Score Championship will now have traveler trophies. Union County Sportsman Club (Weikert) will sponsor the Varmint for Score Trophy, Vince Pastorella will sponsor the Hunter Class Trophy, and Joe Gilbert will sponsor the Varmint-Hunter Trophy. These trophies will be ready for the 200/300 yd Score Championship to be held at Weikert in August 1991. A big thanks to Jim, Vince, and Joe.

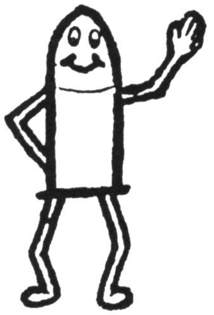
Along the same line, the Pennsylvania State Score Championship traveler trophies will be changed this year. The three trophies will now be in the shape of the state of Pennsylvania. These will be ready for the Pennsylvania State Score Championship to be held at Mainville in July 1991. They will continue to be sponsored by the Mainville Sportsman Club. Thanks Mainville.

Remember if you have any news, questions, suggestions, products, or new equipment regarding IBS Score Shooting forward them to

THE SCORE SHEET,
RR 8 BOX 455,
BLOOMSBURG, PA
17815.

May your X count be high,

BB



INTERNATIONAL BENCHREST SHOOTERS APPLICATION

NAME ____________________

ADDRESS ____________________

CITY __________ STATE __________ ZIP __________

( ) IBS Membership and Precision Shooting Magazine — $30/year

( ) Associate Membership — Must live in same household as a Regular Member — receives no magazine — $5.00/year

( ) Junior member — 17 and under — no magazine — $5.00/year

( ) Overseas Membership — Includes Precision Shooting Magazine $42.50 in US Funds for Surface Mail
$60.00 in US Funds for Air Mail

( ) Life Membership — includes Precision Shooting Magazine — $300.00 in US Funds

( ) Club Membership $30.00 for American Continents
$37.50 Overseas (US Funds only) (For Surface Mail)

MAIL MEMBERSHIPS TO: JOAN BORDEN, R.D. #1 Box 244A, Tunkhannock, Pa. 18657

Make checks payable to IBS.

Allow up to 60 days for first magazine to arrive.

1991 IBS SCORE SHOOTING SCHEDULE

June 2 — SALISBURY ROD & GUN CLUB, Salisbury, Maryland — 100 yard H-VH-VFS, 11:00 a.m.

June 2 — SULPHYR SPRINGS RIFLE & REVOLVER CLUB, Muncy, Pa. — 100 yard H-HV LV-HV .22 Rimfore (Classified), 10:00 a.m.

June 16 — GUTHSVILLE ROD & GUN CLUB, Guthsville, Pa. — 100 yard H-VH-VFS, 10:00 a.m.

June 16 — CAPITAL CITY RIFLE & PISTOL CLUB, Augusta, Maine — 100 yard H-VH-VFS HV for Group, 9:00 a.m.

June 22 & 23 — DUNHAM'S BAY FISH & GAME CLUB, Lake George, NY — NEW YORK STATE CHAMPIONSHIP, 100/200 H-VH-VFS, 9:00 a.m. each day.

June 23 — SULPHYR SPRINGS RIFLE & REVOLVER CLUB, Muncy, Pa. — H-VH, 10:00 a.m.

June 30 — BOWMANSTOWN ROD & GUN CLUB, Bowmanstown, Pa. — 100 yard H-VH-VFS, 10:00 a.m.

June 30 — CAPITAL CITY RIFLE & PISTOL CLUB, Augusta, Maine — 100 yard H-VH-VFS, 9:00 a.m.

July 7 — SALISBURY ROD & GUN CLUB, Salisbury, Maryland — 200 yard H-VH-VFS, 11:00 a.m.

July 7 — UNION COUNTY SPORTSMAN'S CLUB, Weikert, Pa. — 100 yard H-VH-VFS, 11:00 a.m.

July 13 & 14 — MAINVILLE SPORTSMAN'S CLUB, Mainville, Pa. — PENNSYLVANIA STATE CHAMPIONSHIP, 100/200 H-VH-VFS, 10 a.m. Sat., 9 a.m. Sun.

July 21 — GUTHSVILLE ROD & GUN CLUB, Guthsville, Pa. — 100 yard H-VH-VFS, 10:00 a.m.

July 27 & 28 — CAPITAL CITY RIFLE & PISTOL CLUB, Augusta, Maine — MAINE SCORE CHAMPIONSHIP, 27th - 100 yard H-VH-VFS, 9:00 a.m.; 28th - 200 yard H-VF-VFS, 9:00 a.m.

July 28 — IWLA, York, Pa. — YORK COUNTY CHAMPIONSHIP, 100 yard H-VH-VFS, 11:00 a.m.

Aug. 4 — SALISBURY ROD & GUN CLUB, Salisbury, Maryland — 100 yard H-VH-VFS, 11:00 a.m.

Aug. 4 — MAINVILLE SPORTSMAN'S CLUB, Mainville, Pa. — 100 yard H-VH-VFS, 11:00 a.m.

Aug. 10 & 11 — UNION COUNTY SPORTSMAN'S CLUB, Weikert, Pa. — IBS SCORE CHAMPIONSHIP, 200/300 H-VH-VFS, 9:00 a.m. each day.

Aug. 18 — CAPITAL CITY RIFLE & PISTOL CLUB, Augusta, Maine — 100 yard H-VH-VFS, 9:00 a.m.

Aug. 18 — GUTHSVILLE ROD & GUN CLUB, Guthsville, Pa. — 100 yard H-VF-VFS, 10:00 a.m.

August 25 — JOHN J. PALMISANO MEMORIAL RANGE, Wapwallopen, Pa. — 100 yard H-VH-VFS, 10:00 a.m.

Sept. 1 — CAPITAL CITY RIFLE & PISTOL CLUB, Augusta, Maine — 100 yard H-VH-VFS HV Group, 9:00 a.m.

Sept. 1 — SALISBURY ROD & GUN CLUB, Salisbury, Maryland — 100 yard H-VH-VFS, 11:00 a.m.

Sept. 1 — BOWMANSTOWN ROD & GUN CLUB, Bowmanstown, Pa. — 100 yard H-VH-VFS, 10:00 a.m.

Sept. 8 — IWLA, York, Pa. — 200 yard H-VH-VFS, 11:00 a.m.

Sept. 14 & 15 — DUNHAM'S BAY FISH & GAME CLUB, Lake George, NY — IBS SCORE CHAMPIONSHIP, 100/200 H-VH-VFS, 9:00 a.m. each day.

Sept. 22 — MAINVILLE SPORTSMAN'S CLUB, Mainville, Pa. — 100 yard H-VH-VFS, 11:00 a.m.

Sept. 29 — UNION COUNTY SPORTSMAN'S CLUB, Weikert, Pa. — 100 yard H-VH-VFS .22 Rimfire (Classified), 11:00 a.m.

Sept. 29 — DUNHAM'S BAY FISH & GAME CLUB, Lake George, NY — MEMORIAL MATCH, 100 yard Hunter, 11:00 a.m.

Oct. 6 — SALISBURY ROD & GUN CLUB, Salisbury, Maryland — 200 yard H-VH-VFS, 11:00 a.m.

Oct. 6 — SULPHYR SPRINGS RIFLE & REVOLVER CLUB, Muncy, Pa. — 100 yard H-VH LV-HV, 10:00 a.m.

Oct. 20 — UNION COUNTY SPORTSMAN'S CLUB, Weikert, Pa. — 100 yard H-VH-VFS, 11:00 a.m.

Nov. 3 — MAINVILLE SPORTSMAN'S CLUB, Mainville, Pa. — 100 yard H-VH-VFS, 10:00 a.m.

Nov. 3 — SALISBURY ROD & GUN CLUB, Salisbury, Maryland — 100 yard H-VH-VFS, 11:00 a.m.

1991 IBS VARMINT SHOOTING SCHEDULE

June 8 & 9 — UNION COUNTY SPORTSMAN'S CLUB, Weikert, Pa. — IBS 200 & 300 YARD CHAMPIONSHIP, 200/300, SP 9:00 a.m. Sat., HV 8 a.m. Sun.

June 15 & 16 — CAMILLUS SPORTSMAN'S CLUB, Camillus, NY — NEW YORK STATE CHAMPIONSHIP, 100/200, HV-LV-HB 9:00 a.m. each day.

June 16 — CAPITAL CITY RIFLE & PISTOL CLUB, Augusta, Maine — 100 yard HV, 9:00 a.m.

June 16 — IWLA, York, Pa. — 100 yard HV, 10:00 a.m.

June 23 — SULPHYR SPRINGS RIFLE & REVOLVER CLUB, Muncy, Pa. — 100 yard HV-LV, 10:00 a.m.

July 6-7 — SOUTH CREEK NORTHERN TIER SPORTSMAN'S CLUB, Fassett, Pa. — PA. STATE CHAMPIONSHIP, 100/200 HV-LV, 8:00 a.m. each day

July 13 & 14 — DUNHAM'S BAY FISH & GAME CLUB, Lake George, NY — HV-LV or HB, 9:00 a.m. each day.

July 27 & 28 — PAINTED POST FIELD & STREAM, Painted Post, NY — 100/200 meters, HV-LV or HB, 9:00 a.m. each day.

Aug. 10 & 11 — IWLA, York, Pa. — 10th - 100 yard HV-LV, 11th - 200 yard HV-LV, 8:00 a.m. each day.

Aug. 19-24 — KELBLY'S RIFLE RANGE, INC., North Lawrence, Ohio — IBS NATIONALS, 19 & 20 - 100/200 yard HB, 9:00 a.m.; 21 & 22 - 100/200 yard LV & SP, 8:00 a.m.; 23 - 100 yard HV, 9:00 a.m.; 24 - 200 yard HV, 8:00 a.m.

Sept. 1 — CAPITAL CITY RIFLE & PISTOL CLUB, Augusta, Maine — 100 yard HV, 9:00 a.m.

Sept. 29 DUNHAM'S BAY FISH & GAME CLUB, Lake George, NY — MEMORIAL MATCH, 100 meters HV, 11:00 a.m.

Oct. 19 & 20 — IWLA, York, Pa. — 19th - 100 yard HV-LV, 20th - 200 yard HV-LV, 8:00 a.m. each day.

INTERNATIONAL

June 8-9 — DOBBIACO, ITALY. Dolomiti International Match. HV 100-200 meters.

June 25-30 — MONTALIEU, FRANCE. Grand Prix de France, French Championships. Hunter (2 classes) HV, LV 100-200 meters.

August — SAALFELDEN, AUSTRIA. Saalfelden International Match. HV 100-200 meters.

September 7-8 — SOUPPES S/LOING, FRANCE. Trophy Cup Match. HV 100-200-300 meters.

September 12-14 — BISLEY, ENGLAND. British Open Championship. HV 100-200 yards. September 14th - 1000 yards.

October 3-7 — FREJUS, FRANCE. The first World Benchrest Championship. HV LV 100-200 meters, HV 300 meters.

CAPITOL CITY

Usually a match date of April 21st, while a bit early in the shooting season, doesn't turn up anything too wild for weather conditions. On the other hand, if the match is in Augusta, Maine . . . you're on your own, son. Things got so bad up there during the score match on April 21st that they actually called off the varmint for score portion of the match . . . and not a single soul protested the decision. There were very heavy rains, accompanied by blasts of wind, with a wind chill well below zero. It must have been pretty bad . . . several of the target crew were buried (with full honors) the following day.

Hunter class (9 shooters): 1.) Blaine Johnson 246-7x, 2.) Dwight Furrow 243-6x, 3.) Parker Hills 242-4x.

Varmint hunter (7 shooters): 1.) Dwight Furrow 237-5x, 2.) Donna Furrow 230-2x, 3.) Parker Hills 228-2x.

CAMILLUS

Some 27 shooters chose to ignore the St. Patrick's Day festivities at their local town squares, and instead chose to contest the winter league match at Camillus, New York. The winds were erratic, and so were some of the groups. But the spread between the top five shooters was only .0198 . . . close for weather conditions of this type. Top five shooters for the day: 1.) Frank Cleary .2718, 2.) Bob Lamanna .2742, 3.) Jim Kusche .2868, 4.) Woody Ellison .2906, 5.) Jack Sutton .2916. The winner shot a 6PPC, Hall action, Hart barrel, Leupold 36X scope, 27.8 grains of H322 with Bruno 68 grain bullets, in a gun smithed and stocked by Hart.

SOUTH CREEK

The 11th winter league match at South Creek had the following top finishers: 1.) Al Skiver .2620, 2.) Jim Oliver .2798, 3.) Jeff Ely .3004, 4.) Bob DeMonstoy .3054, 5.) Carl Lynn .3164.

FINAL RESULTS
SOUTH CREEK WINTER LEAGUE

JIM OLIVER, in the final match of the year, shaded Jeff Ely just enough to win the season's title. Looking at the top five finishers for the season, and their respective aggregates, one is struck by the thought . . . the top three shooters seemed to be running their own little league, and everyone else was shooting in a different league! Top finishers: 1.) Jim Oliver .2746, 2.) Jeff Ely .2777, 3.) Carl Lynn .2855, 4.) Dave Obert .3527, 5.) Jason Oliver .3564.

DUNHAMS BAY

BOB DENTON, a rookie, cleaned a few clocks (34 of them, if you like exact figures), at The Bay on May 5th, with a nice .2272 aggregate at 100 meters. Seems like a good day for the rookie shooters . . . they had 3 of the top 6 slots occupied. Top ten shooters were: 1.) Bob Denton .2272, 2.) Earl McFarland .2352, 3.) Michel Monfils .2668, 4.) Allie Euber .2782, 5.) Barry Devliegher .2812, 6.) Frank Harris .2814, 7.) Al Gustafson .2996, 8.) Mike Sicina .3000 (hard to hit that figure exactly. Nice going, Mike), 9.) Brian Hollister .3032, 10.) Norm Dixon .3072. The agg winner shot a 6PPC, Stolle action, Hart barrel, Leupold 36X scope, 27.7 grains of H322 with Euber 68 grain bullets and Federal primers. Seely Masker was the gunsmith and stocker.

CHARLIE FOUNTAINE, not exactly a rookie, beat out 9 other pretenders to the throne in the hunter class. Top five shooters were: 1.) Charlie Fountaine 248-9x, 2.) Tom Lazot 247-3x, 3.) Bill Niemi 246-7x, 4.) Dan Caruso 244-7x, 5.) Ira Farnsworth 244-7x.

DUNHAMS BAY WINTER LEAGUE, FINAL STANDINGS

MYLES HOLLISTER won the coveted winter league crown at Dunhams Bay for 1991, via a .2637 average. He was trailed by: 2.) Bob Griffin .2677, 3.) Brian Hollister .2730, 4.) Dick Denton .2807, 5.) Allie Euber .2835, 6.) Earl McFarland .2879, 7.) Lee Euber .2897, 8.) Tom Peria .2901, 9.) Al Joly .2988, 10.)Norm Dixon .3020.

SALISBURY

April 7, 1991 dawned bright, sunny and warm on Delmarva. The Salisbury IBS Gun Club was pleased to host its first shooting match of the season. With 20 shooters in attendance it turned out to be quite a day. In the Varmint for Score class there were 14 shooters and Chris Yingling (a 14 year old shooter) took top honors. Chris who shot a 6PPC rifle with a Stolle action, Hart barrel, Bausch and Laub scope, Gunsmith - Pastorella ended the day with a score of 250-15x.

In the Varmint Hunter class there were only three shooters and Roy Hunter came in first. Roy shot a 6PPC rifle with a Remington action, Hart barrel, Leupold scope, smithed by Kern, and ended with a score of 248-11x.

In the Hunter class Ron Poisker was the winner. Ron shot a 6x44 rifle with a Remington action, Hart barrel, WED T6 scope, and ended the day with a 246-8x.

At the culmination of the day's shooting, trophies and money were distributed to the winners. Announcement was made of the Year Long Contest sponsored by Salisbury IBS Club. This year $1,000 has been put up in prize money and will go to the following classes: Varmint for Score - $200 to 1st, $120 to 2nd and $80 to 3rd; Varmint Hunter - $200 to 1st and $100 to 2nd; Hunter Class - $200 to 1st and $100 to 2nd.

Anyone wanting to compete for this prize money will need to shoot in five **(5)** of the eight registered IBS matches and the money will be distributed on the top combined aggregate of the year.

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PRE-REGISTRATION REQUIRED

1991 IBS CHAMPIONSHIPS

Kelbly's Rifle Range, Marshallville, Ohio

August 19 through 24, 1991

CLASSES:

HEAVY BENCH (Five 10-Shot matches at each yardage)
LIGHT VARMINT, SPORTER, HEAVY VARMINT (Five 5-Shot matches at each yardage)
Warm-up Matches will be held on all days

COURSE OF FIRE:

August 19	100 Yard Heavy Bench
August 20	200 Yard Heavy Bench
August 21	100 Yard Sporter and Light Varmint
August 22	200 Yard Sporter and Light Varmint
August 23	100 Yard Heavy Varmint and Powder Puff
August 24	200 Yard Heavy Varmint

AWARDS:

IBS Travelers

Shooters Choice Trophy, sponsored by Venco Industries — 4-Gun Champion
Field & Stream Traveling Plaque — 3-Gun Champion
Kelbly Enterprises Traveling Cup — 2-Gun Champion
Precision Shooting Traveling Plaque — LV Champion
Cpl Miller Memorial Traveling Plaque — Sp Champion
Gun Digest Traveling Plaque — HV Champion
A.H. Angerman Memorial Traveling Plaque — HB Champion
Joseph P. Borden Memorial Traveling Cup — HV Champion Team

Keeper Plaques: Each Grand Aggregate Champion, Each Multiple Gun Champion, Junior Heavy Varmint Champion, Heavy Varmint Team Champions (Provided by PS)

Top 20 patches: Heavy Bench Grand, Light Varmint Grand, Sporter Grand, Heavy Varmint Grand, LV/SP Two Gun, LV/SP/HV Three Gun, LV/SP/HV/HB Four Gun

Champion Patches: Yardage Champion in each class, Grand Aggregate Champion in each class, Each Multiple Gun Champion

Match Pins: Match winner for each record match in each class (New design enameled pins)

Trophies (Club): First through Fifth each Range Aggregate; Second through Sixth each Grand Aggregate; Second through Sixth each Multiple Gun; Small Group each yardage, each class; First Place Jr HV 100 Yard, First Place Jr HV 200 Yard, Second Place Jr HV Grand Aggregate

* * *

August 23 — Merchandise Drawing and Chicken Dinner

* * *

PRE-REGISTRATION:

$15.00 first gun and $7.00 each additional gun plus $1.00 IBS fee each day
Juniors (17 and under) are half price

Deadline for pre-registration is July 19, 1991. A late fee of $10.00 will be assessed after that date.

ACCOMMODATIONS:

Knights Inn, Wadsworth (216) 336-6671
Knights Inn, Canton (216) 492-5030

ADULT FEE SCHEDULE

HB (2 Days)	$32.00
LV/SP (2 days)	46.00
HV (2 Days)	32.00
LV/SP/HV	78.00
LV/SP/HV/HB	110.00

OFFICIAL PRE-REGISTRATION FORM IBS 1991 NATIONALS

Send entries to:

KELBLY'S RIFLE RANGE
7222 Dalton Fox Lake
North Lawrence, OH 44666

Phone: 216-683-4674

Make check payable to:

KELBLY'S RIFLE RANGE

You are required to be an NBRSA or IBS member to participate, OR BRSC.

Pre-registration is required at least thirty days before date of matches. The IBS Board of Directors has authorized a $10 penalty for late registration. **Total refund if not present.**

KELBLY'S RIFLE RANGE
MARSHALLVILLE, OHIO
August 19 through 24, 1991

Check the boxes for the class or classes you wish to shoot.

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HEAVY VARMINT ☐

Are You Left Handed ☐ YES ☐ NO

Please Note: To facilitate statistical operations, 4-gun shooters will be squadded on the first relays.

SIGNATURE____________________ DATE__________

NAME (Please print or type) ____________________

STREET ____________________

CITY____________________ STATE__________ ZIP__________

DUNHAMS BAY

Thirty six shooters on line for the registered 100 meter heavy varmint match at The Bay on April 21st. LEE EUBER ran off and hid from the field . . . which is sort of what he did at last year's IBS Championships, now that we think about it. There were even a few visitors from foreign and exotic lands (Pennsylvania), but they failed to cover themselves with glory, or anything even faintly resembling glory. The immediate past president of the IBS didn't do too badly . . . if we take out the .826 group. As for the owner of Bald Eagle Precision Machine . . . we won't go into that here . . . besides, it's all in the match bulletin. Top finishers for the day: 1.) Lee Euber .2674, 2.) Bill Niemi .3048, 3.) Allie Euber .3094, 4.) Bob Denton .3138, 5.) Lou Church .3302, 6.) Brian Niemi .3370, 7.) Paul Dion .3542, 8.) Richard Johnson .3610, 9.) Bob Griffin .3612, 10.) Don Cameron .3622. The agg winner shot a 6PPC, sleeved Remington 600, Hart barrel, Lyman-Siebert 30X scope, 28.0 grains of T322 with 68 grain Euber bullets and Federal primers.

Hunter class (5 shooters): 1.) Bill Niemi 245-8x, 2.) Brian Niemi 245-6x, 3.) Rocky Murray 244-5x. We won't bother listing the equipment of Bill Niemi, who shot a .30 Viper. Just take our word for the fact that he made everything himself except the lenses in the scope (and he is reported as thinking about trying that).

CAMILLUS

The final match of the winter league at Camillus on March 24th had rain and cool temperatures in the 30s. Well, what do you expect at a winter league match (other than snow, of course)? Top five shooters for the day were: 1.) Frank Cleary .2690, 2.) Lynn Lewis .2846, 3.) John Stekl .2928, 4.) Tim Simbari .2934.

FINAL RESULTS CAMILLUS WINTER LEAGUE

FRANK CLEARY closed the winter league with a rush, winning the winter league title in the process. Top shooters in the seasonal aggregates were: 1.) Frank Cleary .2640, 2.) Woody Ellison .2863, 3.) Tim Simbari .2911, 4.) Robert Lamanna .3123, 5.) Bill Ward .3213, 6.) Jim Kusche .3305, 7.) George Getty .3390, 8.) Jim Stekl .3407, 9.) Steve Borsh .3468, 10.) Frank Calacchia .3570.

CAMILLUS

Weather conditions for the March 3rd match were "cloudy, fog, and 40 cold degrees". Not the best of shooting conditions, but one shooter had a handle on things (there's always a wise guy in every crowd). The other 22 poor devils struggled through the day. Top five shooters were: 1.) Frank Cleary .2394, 2.) Tim Simbari .2878, 3.) Ed Joiner .2888, 4.) Frank Calacchia .3220.

SULPHYR SPRINGS

A registered score match at the Muncy, Pa. club on April 14th, with a good turnout of shooters to contest the various issues.

Hunter class (10 shooters): 1.) Alan Kogoy 250-14x, 2.) Frank McKee 247-15x, 3.) Vince Pastorella 247-11x, 4.) Guy Green 247-9x, 5.) Kenneth Livengood 243-9x. The winner shot a 30/30 with Remington action, Chanlynn barrel, Leupold scope, and an unlisted load.

Varmint hunter class (8 shooters): 1.) Alan Kogoy Jr. 250-13x, 2.) Bill Creasy 249-8x, 3.) Kenneth Madeira 246-10x. The agg winner shot a 6PPC, Remington action, Chanlynn barrel, Leupold scope, and an unlisted load.

Heavy varmint for score (21 shooters): 1.) Dennis Collins 250-17x, 2.) Mike Becker 250-17x, 3.) Douglas Wallace 250-16x, 4.) Dale Ogden 250-16x, 5.) Robert McGuigan 250-14x. The winner shot a 6PPC, sleeved XP-100 action, Atkinson barrel, Leupold scope, and 27.7 grains of H322 with Rubright 68 grain bullets and Federal primers.

Light varmint for score (9 shooters): 1.) Ted Parnego 250-21x, 2.) George McCoy 250-18x, 3.) David Obert 250-17x, 4.) Douglas Rea 250-13x, 5.) Richard Hain 249-14x. The winner shot a 6PPC, 40X action, an unspecified barrel (perhaps none; we don't really know), a Premier scope, 30 grains of 3032 (!) with Fowler 63 grain bullets, and Remington 7½ primers.

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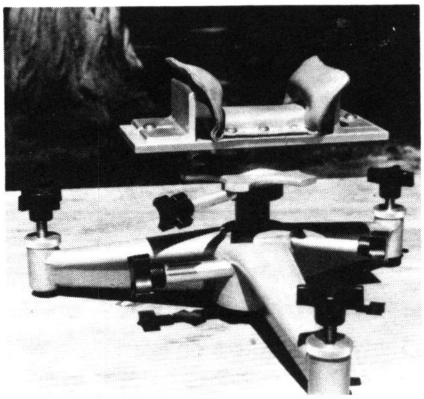

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